

REPORT
OF THE
MINISTER OF AGRICULTURE
FOR THE
DOMINION OF CANADA
FOR THE
YEAR ENDING MARCH 31, 1918

PRINTED BY ORDER OF PARLIAMENT.



OTTAWA
J. DE LABROQUERIE TACHÉ,
PRINTER TO THE KING'S MOST EXCELLENT MAJESTY
1918

CONTENTS.

	PAGE.
I. General Remarks.....	5
II. Arts and Agriculture.....	8
Dairy and Cold Storage Branch.....	8
Seed Commissioner's Branch.....	12
Live Stock Branch.....LLL ..	19
Horse Division.....	20
Cattle Division.....	21
Sheep, Goat and Swine Division.....	24
Poultry Division.....	27
Feed Division.....	31
Dominion Experimental Farms and Stations.....	32
Division of Chemistry.....	39
Division of Field Husbandry.....	41
Division of Horticulture.....	45
Cereal Division.....	47
Division of Botany.....	48
Division of Forage Plants.....	50..
Bee Division	52
Poultry Division.....	53
Tobacco Division.....	54
Division of Illustration Stations....	56
Division of Economic Fibre Production.....	57
Division of Extension and Publicity.....	57
Health of Animals Branch.....	58
Meat and Canned Foods Division.....	66
Fruit Branch.....	68
Inspection Stations.....	74
Entomological Branch.....	75
International Institute of Agriculture Branch.....	78
Publication Branch.....	81
III. Patents of Invention.....	82
IV. Copyrights, Trade Marks, Industrial Designs and Timber Marks Branch.....	86
V. Public Health and Quarantine.....	88

APPENDICES.

MISCELLANEOUS

	PAGE.
No. 1. Public Health.....	91
No. 2. Exhibitions.....	95

REPORT
OF THE
MINISTER OF AGRICULTURE
1917-18

*To His Excellency the Duke of Devonshire, K.G., P.C., G.C.M.G., G.C.V.O., etc., etc.,
Governor General and Commander in Chief of the Dominion of Canada.*

MAY IT PLEASE YOUR EXCELLENCY:

I have the honour to submit to Your Excellency a report of the Department of Agriculture for the fiscal year ended March 31, 1918.

I. GENERAL REMARKS.

The work of the department has been carried on efficiently, and a synopsis of the operations of the various branches comprised therein is laid before Your Excellency under their respective headings.

The legislation affecting the department during this period consisted of:—

Chapter 32, 7-8 George V, intituled "An Act respecting Live Stock."
(Assented to September 20, 1917.)

Chapter 33, 7-8 George V, intituled "An Act to amend The Meat and Canned Foods Act." (Assented to September 20, 1917.)

MIGRATORY BIRDS CONVENTION ACT.

On August 29, 1917, assent was given to the Migratory Birds Convention Act. This Act puts into effect the Migratory Birds Convention between Great Britain and the United States of America for the protection of migratory birds in Canada and the United States, which convention was ratified on December 7, 1916. The negotiations in the interests of the Canadian Government were undertaken by the Department of Agriculture, the Department of the Interior, and the Commission of Conservation co-operating. As the administration of game legislation, so far as the Dominion Government is concerned, comes under the jurisdiction of the Department of the Interior, the latter department has been given the administration of the Act under

9 GEORGE V, A. 1919

the general supervision of the Advisory Board on Wild Life Protection, upon which board the Department of Agriculture is represented.

Regulations have now been drafted by the Advisory Board, and it is expected that they will shortly be put into effect.

Under the convention the permanent protection of migratory insectivorous birds is provided for, and as these birds constitute one of the most important natural factors tending to prevent the increase of the insect pests of our crops and forests the enactment of this legislation is of considerable importance to the agricultural and forestry interests of Canada.

By an Order in Council, approved under date the 16th day of April, 1917, the Regulations relating to Tuberculosis, approved under date the 18th May, 1914, were rescinded and new Regulations substituted in lieu thereof.—*Vide Canada Gazette*, vol. L, p. 3664.

By an Order in Council, approved under date the 15th day of May, 1917, the General Regulations under the "Destructive Insect and Pest Act," approved under date the 4th November, 1914, and amendments thereto, were further amended by adding to Regulation X, Part (a) Insects and Pests, the following:—

"The Apple and Cherry Ermine Moths (*Yponomeuta malinellus* and *Yponomeuta padellus*)."

Vide Canada Gazette, vol. L, p. 4062.

By an Order in Council, approved under date the 17th day of July, 1917, the General Regulations under the Destructive Insect and Pest Act, established under date the 4th November, 1914, and amendments thereto, were repealed and new Regulations established in lieu thereof.—*Vide Canada Gazette*, vol. LI, p. 264.

By an Order in Council, approved under date the 23rd day of October, 1917, the Order in Council of date the 8th February, 1915, respecting the payment of fees for obtaining the grant or obtaining the renewal of patents or for obtaining the registration of designs or trade marks or the renewal of such registration in an "enemy country" was revoked, and authority given to grant license to all persons resident, carrying on business, or being in the Dominion of Canada, being of British, Allied, or Neutral nationality.—*Vide Extra Canada Gazette*, November 5, 1917.

By an Order in Council, approved under date the 30th day of January, 1918, the Regulations established under "The Animal Contagious Diseases Act" of date 30th November, 1909, and amendments thereto, were further amended by rescinding section 42 and substituting a new section in lieu thereof.—*Vide Canada Gazette*, vol. LI, p. 2696.

By an Order in Council approved under date the 4th day of February, 1918, the following Regulations were made and enacted in virtue of the provisions of The War Measures Act, 1914, to enable an enquiry to be made in Canada with respect to the supply of seeds, fertilizers, and other agricultural supplies available and needed for the coming season:—

REGULATIONS.

1. The Minister of Agriculture shall have power from time to time to make such enquiries and investigations as he deems necessary to ascertain any particulars that he may deem advisable with respect to the demand for, the supply, the use, manufacture, preparation, location, ownership, sources of supply and

SESSIONAL PAPER No. 15

prices of seed, fertilizers, and of any other article required in connection with the production or raising of agricultural produce or of any article required in connection with the manufacture, transportation or marketing thereof, and to make such regulations as he may deem necessary for securing any information that he may require in connection with the same; and may also require any person and any officer or employee of any corporation, association or syndicate to answer correctly, to the best of his knowledge, under oath or otherwise, and within such time as the Minister may prescribe, all questions touching his knowledge of any matter to be investigated hereunder, to produce to the Minister or to any officer by the Minister thereto authorized, all books, letters, papers, or documents in his possession or under his control relating to such matter, and to permit the Minister or such officer as aforesaid to enter at any reasonable times any premises for any purpose connected with any enquiry or investigation hereby authorized.

2. Any person who shall in any way impede or obstruct the Minister of Agriculture or any officer thereto authorized by the Minister in obtaining any information or entering any premises as aforesaid, or shall neglect or refuse to supply any information or to produce any books, letters, papers or documents in his possession or control that the Minister of Agriculture or any officer by him thereto authorized may require or shall wilfully make any false statement shall be guilty of an offence and shall be liable on summary conviction to a penalty not exceeding one thousand dollars or to imprisonment for a term not exceeding one year, or to both fine and imprisonment.

By an Order in Council, approved under date the 11th day of February, 1918, subsection B of section 7 of the General Regulations under "The Destructive Insect and Pest Act." approved under date the 17th day of July, 1917, respecting the importation of pineapples and bananas from Hawaii, was amended.—*Vide Canada Gazette*, vol. L, p. 2855.

By an Order in Council, approved under date the 20th day of February, 1918, the Regulations respecting Patents of Invention, established by Order in Council of date the 2nd October, 1914, under and by virtue of the provisions of the War Measures Act, 1914, were further amended by adding regulation, numbered 11, at the end thereof.—*Vide Extra Canada Gazette*, February 26, 1918.

By an Order in Council, approved under date the 8th day of March, 1918, the Regulations respecting Patents of Invention, established by Order in Council of date the 2nd October, 1914, under and by virtue of the provisions of The War Measures Act, 1914, were further amended by adding thereto the following regulation, numbered 12:—

"12. Any person to whom a license is granted to make, use, exercise or vend a patented invention under the provisions of regulation three, shall have the same power and right to take any action or other legal proceedings to prevent or restrain any infringement of the said patent which affects the rights of such person under such license, or to recover compensation or damages for any such infringement, that the owner of a patent would have for an infringement of his patent."

9 GEORGE V, A. 1919

As there were no large international exhibitions in view when the Panama-California International Exposition held in San Diego, California, during 1916 and also up to March 31, 1917, was over, the Canadian exhibits shown thereat were packed and transported to Ottawa, where they are stored for the present.

A report from the Canadian Exhibition Commissioner for the fiscal year ended March 31, 1918, will be found as an appendix hereto. (See appendix No. 2.)

II. ARTS AND AGRICULTURE.

DAIRY AND COLD STORAGE BRANCH.

The season of 1917 was a notable one in the history of the dairying industry, prices for all products having reached the highest level on record. The total production shows an increase over 1916, with a small decrease in butter but a large increase in condensed milk and milk powder, the output of these two latter products having increased over 100 per cent. The Cheese Commission reports that the exports of cheese will be over 174,000,000 pounds for the crop of 1917, or some 6,000,000 pounds less than for 1916, but on the other hand home consumption has shown a very considerable increase. It is calculated that the total production of cheese in 1917 was about 200,000,000 pounds, having a value of \$43,500,000. The value of all dairy products in 1917 is estimated to be approximately \$200,000,000.

THE CHEESE COMMISSION.

In March, 1917, the Imperial Board of Trade expressed a desire to purchase the exportable surplus of Canadian cheese for the season of 1917. Mr. Jas. McGowan was sent out as a representative of the Board, and the Canadian Government named Mr. Jas. Alexander, Montreal, and Mr. J. A. Ruddick, Dairy and Cold Storage Commissioner, as the Canadian members of the commission. After negotiations the Board of Trade finally authorized the commission to pay 21½ cents f.o.b. steamer for the season's output. The commission established an office in Montreal, and organized the necessary staff to carry on the business.

SCARCITY OF RENNET.

I am informed that the supply of rennet continues to be far short of the requirements of the cheese manufacturers, and that pepsin in various forms is still being used as a substitute. The experts of the department have watched the matter very carefully, and they report that the use of pepsin has not affected the high quality of the Canadian cheese. A close check is also kept on the character of the various preparations of pepsin, which are being offered to the cheesemakers, to see that nothing inferior is put on the market.

SESSIONAL PAPER No. 15

DAIRY STATION AT FINCH, ONT.

The dairy station was operated by the Dairy Branch during the entire year as usual. The gross value of the milk received for the calendar year 1917 was \$61,289.35, an increase of \$17,049.19 over 1916. The output of the station is changing somewhat year by year, less cheese being made and more milk and cream being sold. The sales of milk in 1917 exceeded those of 1916 by 242,769 pounds. Sales of cream increased by 7,401 pounds of butter fat. The average net price paid the patrons per hundred pounds of milk for the year was \$2 delivered at the factory, which was 40 cents per hundred more than was paid in 1916. The high price received for milk shipped to the cities of Montreal and Ottawa during the winter months is encouraging greater production during that season of the year.

The Madawaska creamery at St. Hilaire, N.B., was again operated by the department during the summer months. There was a slight increase in the output of the creamery over 1916, the total value of the output being \$18,320.71. The average price paid to the patrons per pound of butter fat was 44.82 cents. In 1916 the average price paid for butter fat was 35.55 cents. The farmers in the district are becoming interested in the improvement of their dairy herds. A number of pure bred dairy sires have been brought into the district and, although improvement is somewhat slow, the increase in dairy products in this district should be considerable in the course of a few years.

COW TESTING.

The officers in charge report that during the year 1917, herd record work, commonly known as cow testing, was continued on the same general lines as in former years, through cow testing associations and the 35 dairy record centres. There were 29,240 cows in 3,421 herds under test, with a total number of 205,156 individual monthly records. The demand for milk record forms from dairymen in all parts of the Dominion, who keep private records but do not send any figures to the department, has been larger than ever before.

As in former years, the herd records indicate very substantial increases in the yield of milk and fat per cow since cow testing was commenced. It appears that the average yield of milk per cow for all Canada has increased fully 30 per cent since the work was first started. This means that the total value of Canadian dairy products was greater by at least \$50,000,000 in 1917 than it would have been if there had been no improvement or increase in the herds since 1904. The increase in the yield of milk from individual herds has been much more striking because the general average includes all those herds whose production of milk has remained stationary, or nearly so.

The results already obtained have awakened such a widespread interest in cow testing, and the requests for help are so insistent, that some reorganization of the work which will cover every dairying district in the Dominion seems to be advisable. A new plan has been arranged, under which it is proposed to discontinue the record centres and to enlist the services of cheesemakers and buttermakers or other qualified persons to do the testing at the rate of 10 cents per test, the milk testers to provide their own equipment. The cheese factories and creameries are natural centres for

9 GEORGE V, A. 1919

such work. In order to carry on herd record work in any district under the new arrangement, it will only be necessary for the farmers to co-operate with some qualified milk tester by weighing and sampling each cow's milk night and morning, on three days of every month, and by delivering the samples at the appointed place of testing.

INSPECTION OF DAIRY PRODUCTS.

The work in this division has been increased considerably by the introduction of oleomargarine. The inspectors employed to administer the Dairy Industry Act are charged with the duty of watching the retail sale of oleomargarine. Speaking generally, the dairy laws of Canada are well observed. The chief offense seems to be that of allowing an excess of water to remain in butter offered for sale. A number of prosecutions have been made during the year on this account.

REFRIGERATOR CAR SERVICES FOR BUTTER AND CHEESE.

The special refrigerator car services for butter were in operation from May 14 to October 6, covering the dairy sections of Ontario, Quebec, and Nova Scotia. The department guaranteed earnings of a certain sum per car for a regular weekly refrigerator service by which shippers were enabled to forward any quantity of butter from one package upwards without any additional cost other than the regular less-than-carload freight rate. About 1,300 cars were operated in this service at a total cost to the department of approximately \$10,500.

The usual inspection was maintained by the department at the railway terminals at Montreal, Toronto, and Halifax, and the operation of the service as a whole was carefully supervised. The inspectors reported daily regarding the condition of the cars on arrival, giving the temperature of the butter, the quantity of ice remaining in the bunkers, the stowage of the packages, etc. With a few exceptions a good service was maintained on each route.

For the carriage of cheese the department paid the icing charges at the rate of \$6 per car on about 1,400 carloads shipped between June 11 and September 8. The arrangement applied to shipments in carloads, minimum 24,000 pounds, on cheese consigned to Montreal for local delivery and for export, also in less than carload quantities when shipped in one car by one or more consignee from one station, when the aggregate weight of the shipment was not less than 24,000 pounds. At least two tons of ice had to be supplied to each car by the railway companies.

Under the regulations of the Cheese Commission, all cheese intended for export had to be shipped to Montreal, and in order that the cheesemaking industry in the province of Prince Edward Island should not be at a disadvantage the department agreed to pay the icing charges on carload shipments between Point du Chene, N.B., and Montreal, on carloads of cheese originating in Prince Edward Island. All cheese from that province were moved to Montreal by rail, and, as a result of the arrangement referred to, were delivered in first class condition.

CARGO INSPECTION.

During the season of navigation four cargo inspectors, instead of six as in pre-war days, were employed at Montreal, and one inspector at Halifax. In Great

SESSIONAL PAPER No. 15

Britain the usual staff of four inspectors was maintained, covering the ports of London, Liverpool, Glasgow, and Bristol.

Wherever possible thermographs were placed in the ships at Montreal along with perishable cargo, but not so many records were obtained as usual owing to the transient character of many of the steamers in the service.

Special reports were made by the inspectors at the ports in Great Britain on the condition of the fibre cheese boxes shipped from Canada. This is a new style of package, made from wood pulp, which was used to a considerable extent during the past season, and copies of the inspectors' reports were furnished to the Cheese Commission, to the box manufacturer, and to other interested parties.

GRIMSBY PRECOOLING AND EXPERIMENTAL FRUIT STORAGE WAREHOUSE..

During the season of 1917 experimental and demonstration work was suspended owing to the fact that the scientific staff have all enlisted. Operations were confined to the commercial handling of fruit. Records have been kept and reports collected throughout the season, which give considerable information on the subject. Some excellent results have been obtained in shipping precooled sour cherries to Winnipeg by refrigerated express. Increased use was made of the plant for storage by the canning factories and by growers in accumulating carloads of fruit; the quantity handled in this way showing an increase of 350 per cent over 1916.

SUBSIDIZED COLD STORAGE WAREHOUSES.

Thirty-three warehouses, with a capacity of four and one-quarter million cubic feet of refrigerated space, have been subsidized under the Cold Storage Act (chapter 6, 6-7 Edward VII). The total cost of these warehouses was \$2,300,354.85.

The subsidies represent 30 per cent of the cost of the warehouses, and the total amount paid to date is \$671,690.53. The payments during the last year were \$7,787.21. There are four warehouses on which small payments of the subsidy are not yet due, and three warehouses where part of the subsidy has been withheld. A new warehouse is now under construction at Saskatoon, Sask. This warehouse was started in 1914, but, owing to the financial situation resulting from the war, the construction was not completed. The contract has been renewed and the warehouse is now being built by the Saskatchewan Co-operative Creameries, Limited.

CREAMERY COLD STORAGE.

The bonus system of paying \$100 to creameries which build cold storages according to plans supplied by this department has resulted in exceptionally good ice facilities being installed in a great many creameries which must necessarily carry butter for short periods.

During the past year thirty-eight creameries received the bonus of \$100, while eleven applications were rejected or held for future consideration. The number of creameries bonused since 1897, when the policy was first adopted, is 1,015, with a total expenditure of \$92,675.25.

9 GEORGE V, A. 1919

SMALL COLD STORAGES.

A great many inquiries are received by letter regarding the construction of creamery cold storages and small storages suitable for farm and country homes. Plans and specifications are incorporated in bulletins, and these, along with blue-prints on a working scale, are sent to applicants from all parts of the Dominion.

PUBLICATIONS.

The following publications in the Dairy and Cold Storage Series have been issued during the year:—

Bulletin No. 53, entitled, "Buttermaking on the Farm."

Circular No. 22, entitled, "The Manufacture of Cottage and Buttermilk Cheese."

Circular No. 23, entitled, "The Manufacture of Buttermilk from Skimmed Milk."

Circular No. 24, entitled, "A New Plan for Cow Testing."

THE SEED COMMISSIONER'S BRANCH.

The work of the Seed Commissioner's Branch has continued under four divisions, seed production, seed testing, seed inspection, and seed supply.

Moneys expended to support provincial governments in encouraging the production and selection of superior seeds have given excellent results. The advisability of continuing with this work has been under consideration in correspondence with provincial Departments of Agriculture, which have agreed to the application of further restrictive regulations to encourage the production of the best varieties of uniform quality, and discourage the production of those varieties of crops which tend to detract from the value of Canadian grain and other farm produce when blended together for commerce.

Seed production under wartime conditions has required special attention and greatly increased activities in the matter of field, root and garden seeds, practically all of which were formerly imported from Europe. Efforts made to secure an increase in the amount grown have met with success and will be continued.

Seed testing work has continued at Ottawa and Calgary seed laboratories without material change as compared with former years. The seed laboratory at Ottawa was established in 1902, and at Calgary in 1906, in both of which the work has tended to increase each year about ten per cent over that of the previous year. Because of the volume of the work which has to be done promptly and during a comparatively short period of the year, it has become necessary to establish an additional seed laboratory. The work of seed laboratories in Canada, as in other countries, forms the basis of control over the sale of agricultural seeds. Before the laboratories were established farm and garden seeds of inferior quality were freely offered in Canadian markets largely because they could not be sold in other countries which had systems of seed control.

Seed inspection in Canada includes the administration of the Seed Control Act and regulations made thereunder. This service to agriculture was started in

SESSIONAL PAPER No. 15

1905 and gradually extended until the commencement of the war, when the staff was decreased by enlistments. The fewer permanent and temporary seed inspectors employed have been expected to supervise larger areas than formerly.

Seed supply has formed a problem of first importance during the past year. Wartime values of all kinds of seed have rendered it much more difficult than usual for seedsmen to perform their normal functions in meeting to the full the requirements of Canadian farmers and gardeners. In addition very considerable areas in both the west and the east of Canada have been in need of extensive supplies of seed of the food grains because of partial crop failure due to unusual climatic conditions. The services of the Seed Purchasing Commission, which was established last year, have therefore been continued and enlarged. The object was to guard against possible seed shortage by purchasing and holding in store in Canadian Government Elevators supplies of good seed of food grains. Its operations have been carried on in co-operation with the established seed trade, and all of the grains are purchased for seed subject to inspection as to definite standards of quality. Selling prices are calculated to cover the cost of the recleaned seed, and appropriations for purchase are promptly returned to the Receiver General.

It has been necessary this year to enlarge upon the annual survey made in all parts of Canada to ascertain the extent of seed shortage for any kind of crop, and acting in co-operation and concurrently with the Bureau of Markets of the United States Department of Agriculture, a definite survey has been made and information secured showing the amount of seed supplies held in reserve by seed merchants. It is satisfactory to report that no prospective seed shortage was indicated for any of the important crops, and the publication of this information provided much needed assurance to all concerned.

SEED GROWING.

Financial assistance to the provincial Departments of Agriculture and other organizations has been continued for encouraging the production of superior seed crops. Special attention has been paid to those kinds of seeds which are difficult to secure in Canada owing to war conditions.

Subventions to the provincial Departments of Agriculture for field crop competitions, local seed fairs, and provincial seed exhibitions, have been continued on the basis of two-thirds of the money awarded in cash prizes within certain limitations.

SESSIONAL PAPER No. 15

lation of the Maritime Provinces Winter Fair at Amherst, N.S., on account of the building being used for military purposes, and a reduction in the amount paid for prizes at the Ottawa Winter Fair.

ASSISTANCE TO C.S.G.A.

The Canadian Seed Growers' Association has been given the usual grant of \$7,000 from the Seed Commissioner's Branch appropriation for maintaining the central staff and the inspection necessary in connection with the production of registered and improved seed.

FIELD ROOT AND VEGETABLE SEEDS.

The production of essential field root and garden vegetable seeds has increased materially during the past year. The obtaining of supplies from Europe becomes more difficult with the continuation of the war, and prices have advanced accordingly. Seedsmen have offered higher prices to have seeds grown in Canada, and my officers in charge of this work have arranged for the production of a large part of our requirements. The growing of mangel, sugar beet, and vegetable seed has been extended in British Columbia, and swede seed in Manitoulin Island, Quebec and the Maritime Provinces. The Experimental Farms Branch is co-operating, particularly in the growing of field root seeds, and it is anticipated that the 1918 seed crop will prevent a shortage of the more important kinds.

The quantity of home-grown seeds produced in 1917 was practically double that of 1916. Approximately 64,000 pounds of seed passed our inspection, and subventions were paid thereon amounting to nearly \$2,400. The kinds and amounts produced were: Sugar beet, 49,000 pounds; mangel, 10,705; swede, 2,446; garden beet, 645; radish, 427; parsnip, 232; onion, 192; and smaller quantities of cabbage, garden carrot, tomato, and muskmelon. A much larger number of farmers and gardeners grew sufficient seed for their own use.

WESTERN CANADA TIMOTHY SEED.

Seed Branch officers have continued their attention to timothy seed production in Western Canada, particularly in Alberta, where this seed may be considered a by-product of intensive ranching. The seed is produced mainly in districts where the raising of live stock predominates, and in northern districts on land that is too rich and too moist to successfully mature cereal crops in the average year. The dry weather of last season seriously militated against production, but the seed was of excellent quality and found a ready market.

The Canadian Government terminal elevator at Calgary is equipped with cleaning machinery, and timothy seed growers are given the same service as growers of flax seed. The timothy seed is cleaned to grade which enables the growers to put it on the market in a finished condition. During the past season 980,107 pounds of timothy seed was received at the Calgary elevator. About 42 per cent was graded No. 1 under the Seed Control Act standards, 42 per cent No. 2, 13 per cent No. 3, and 3 per cent below was the standard.

9 GEORGE V, A. 1919

The South Alberta Hay Growers are the heaviest producers, and sold their entire stock of cleaned seed from the elevator at prices for each grade in excess of Chicago market quotations. The northern growers are also organizing for purposes of production and sale.

SEED TESTING.

During the year ending August 31, 1917, 12,431 samples of seed were received at the Ottawa laboratory. About 70 per cent of these were sent by merchants, 25 per cent by farmers and the rest by various organizations. During the same period 13,547 samples were tested for farmers and merchants at the Calgary branch laboratory. Eighty-five per cent of these samples were submitted by farmers.

From September 1, 1917, to March 31, 1918, 10,300 samples have been received at Ottawa and 9,926 at Calgary, compared with 9,763 and 11,870 respectively for the same period last year. In addition to the samples received from merchants, farmers and others, the laboratories also made tests on 1,897 samples of vegetable seeds in connection with the paper packet seed investigation, 828 samples collected by officers of the department in enforcing the Seed Control Act, and 3,715 samples in connection with other investigational work of the laboratory.

FARMERS' GRASS AND CLOVER SEEDS.

More attention is now being given by the Seed laboratory to the examination and reporting of farmers' samples. Last season, 971 samples of red clover, 567 timothy, 276 alsike and 56 alfalfa, were received at Ottawa from farmers. A large proportion of these samples represented uncleaned lots which contained too many weed seeds to be legally sold for seeding purposes. Many of the impurities in this seed are such a size that their separation is impossible or necessitates very heavy dockage. In reporting on such samples these points are emphasized.

CLEANING SEED.

There are, however, a good many samples which may quite easily be cleaned to grade, provided the proper sieves are available. Few of the ordinary fanning-mills are equipped for this work and farmers are therefore placed at a disadvantage in disposing of their seed. To assist them Seed Branch pamphlet No. 1 on "Cleaning Seed" has been prepared. This pamphlet tells how to clean different kinds of seeds, including cereals, and is illustrated with cuts of the different types of sieves required.

INVESTIGATION WORK.

In addition to the purity and germination tests of samples sent by farmers and merchants several thousands of other tests are made every year in connection with the work of seed inspection, paper-packet seed investigation and investigations on methods of analysis, longevity of seeds, impurities of grain from different sources and other lines of research. The laboratory is still co-operating with the Association of Official Seed Analysts of North America in the study of methods of improving

SESSIONAL PAPER No. 15

seed analysis and other matters affecting seed control work. As the annual meeting was held this year on June 18-20 at Detroit, Michigan, several of the officers of the branch were able to participate in the proceedings.

EDUCATIONAL WORK.

The laboratory is continuing to give assistance to agricultural representatives and teachers who take up seed testing, seed judging, weed seed identification and related subjects with their students. It has been found necessary to discontinue for the present the preparation of our reference collections of 100 kinds of economic and weed seeds, but the laboratory is at the service of teachers and others who wish to have weed seeds or other seeds identified. Correspondence in connection with identification of seeds and other technical matters connected with seed testing is increasing from year to year.

SCREENING DISPOSAL.

The disposal of elevator and seed-house screenings in ways that will not lead to any further spread of noxious weeds is still under consideration. On account of the shortage of feed there was a greater demand than usual for grain screenings for use as feed. The Seed Branch has followed this matter closely, and has insisted that screenings so used should be ground after being thoroughly cleaned to remove the smaller weed seeds which our experiments have shown to be not only difficult to grind but useless and at times actually harmful as feed.

EXAMINATION OF FEEDS FOR INJURIOUS WEED SEEDS.

Complaints that mill feeds are sometimes adulterated by screenings which render the feeds harmful to stock are being investigated. The analysis of bran, shorts, and similar feeds for weed seed adulterants requires microscopic examinations. The weed seeds which are suspected of being injurious are not detected by the ordinary chemical analysis. Some of the most injurious are very high in protein and fat and by increasing the content of these constituents in the feed their presence, unless detected by the microscopic analysis, give it an appearance of enhanced value. This kind of work has been undertaken during the past year and it has been found that many of the samples of feeds submitted for analysis contain considerable quantities of mustards and other weed seeds.

SEED INSPECTION.

The enforcement of the Seed Control Act is under the direction of the chief seed inspector, with permanent district officers at Calgary, Regina, Toronto, Ottawa, Quebec, and Truro. These district officers are assisted during the busy season of the seed trade in the spring by temporary seed inspectors.

Last season the inspectors visited 3,547 dealers located in 1,317 towns. In some cases two or three visits were made to a place. Five hundred and one violations of the Act were detected, 94 for failing to have the grade marked on seeds of timothy, red clover, alsike and alfalfa, 46 for representing the seed to be of a higher grade

9 GEORGE V, A. 1919

than it actually was and 72 for selling seed containing impurities in excess of the number permitted in seed which may be legally sold for seeding purposes. In addition there were 172 violations of section 6 of the Act, which requires all seeds except timothy, red clover, alsike and alfalfa, including other clovers and grasses, cereal grains and fodder and pasture plants to be labelled to indicate their noxious weed seed content. One hundred and nineteen lots were found offered for sale which were below the germination requirements. Two lots were sold in violation of both sections 6 and 10. It is chiefly local lots of seed which are found exposed for sale in violation of the Act although occasionally a wholesaler's lot is found marked with a grade higher than its quality or weed seed content warrants.

PAPER-PACKET SEEDS.

The paper-packet seed investigation was continued for the third consecutive season. Field tests to determine the quality and purity as to variety of some of the leading varieties sold in packets by the different wholesale seed merchants were carried out by the Horticultural Division of the Central Experimental Farm. These tests confirmed the results secured the previous season, viz., that certain dealers are supplying seed of very inferior quality in respect to uniformity and type character. The germination of most varieties tested was found to be satisfactory, although in a few cases, seed of very low vitality was being sold.

SEED PURCHASING COMMISSION.

The Seed Purchasing Commission was established in October, 1916, to provide against the possibility of any shortage of good seed grain, particularly in districts in which the cereal grain crop had been seriously injured because of unfavourable climatic conditions. I am pleased to report that the seed requirements of provincial and municipal governing bodies, farmers' organizations and seed merchants were fully supplied to the satisfaction of all concerned. The balance of the moneys provided by order in council for the purchase, storing, cleaning, and distribution of seed grain was promptly returned in the early part of this fiscal year.

It was deemed expedient to continue the services of this commission as an important part of general plans to stimulate the production of food grains. Reports of seed supply in several districts in the Prairie Provinces and in Eastern Canada indicated that large areas were without good seed grain of one or more kinds. Prolonged hot, dry weather had caused partial failure in the oat crop in southern areas of the Prairie Provinces. Large areas in the Maritime Provinces and in Quebec were without seed oats, and there was a very general demand for seed of spring wheat throughout Eastern Canada and also in some localities in Western Canada. Because of unfavourable weather in the province of Ontario the pea and bean crops were a partial failure and there seemed to be real need to secure and hold in reserve supplies of good seed. It appeared quite probable during the early winter months that a large quantity of seed peas would be needed for mixed grain fodder crops for ensilage purposes in lieu of seed corn. The corn crop grown for matured grain not

SESSIONAL PAPER No. 15

only in southern Ontario but throughout the northern areas of the corn belt in the United States, was very seriously injured by early autumn frost. In consequence rigid conservation of seed corn became a pronounced necessity. United States southern-grown varieties were made available for the ensilage crop, but it was not until quite late in the season that it was found practicable to spare seed corn for grain production in Canada. It is pleasant to record that under many difficulties of securing general seed supplies, there existed throughout a wholesome spirit of co-operation in the matter of exchange of seed between the United States and Canada, and it is expected that this relation will be continued throughout the period of the war.

The purchase of grain for seed purposes is based on grain exchange prices at time of purchase to which may be added a small premium for grain of a quality that will on recleaning conform to the established grades for seed grain. The Canadian Government elevators at Calgary, Saskatoon, Moosejaw, Transcona, Port Arthur, and Quebec city are used for the cleaning and distribution of all seed of cereal grains. Selling prices are fixed to cover the cost of the grain, expenses in handling, and the incidental losses that accrue in process of cleaning, transportation, and fluctuation of market values.

The work of the commission has proceeded satisfactorily, emergencies in respect to seed supply have been met, and it is anticipated that the total advance for this purpose will in due time be returned to the Receiver-General.

THE LIVE STOCK BRANCH.

During the course of the year, a new division was created in the branch, to which has been assigned special charge of the work undertaken in connection with the importation, purchase and distribution of feed. The nature of this work is explained later in the report. Mr. R. J. Allen, who has been on the staff of the branch since 1915 and who has had practical experience in the feed business, has been placed in charge of this Division.

THE LIVE STOCK AND LIVE STOCK PRODUCTS ACT.

As has previously been intimated, an important feature of the work to which the Live Stock Branch has given its attention during the past three or four years, has had reference to the improvement of marketing conditions and to the development of an extensive export trade. Specially trained officers have been located at the leading live stock markets in Canada, who, in addition to securing current information respecting receipts and marketings for use in the preparation of the weekly markets report, have rendered important and acceptable service in aiding farmers and feeders in the sale or purchase of stock and in promoting the return to country points of useful breeding and feeding animals. During the course of the work at the stock yards, it was found desirable that certain legislation should be enacted giving the Minister authority to exercise reasonable and necessary supervision as regards the management of the yards, the fees charged and the conditions under which live stock is purchased and sold. It was proposed, therefore, that special legislation should be

9 GEORGE V, A. 1919

obtained providing such authority and the intention of the department in this direction was given effect through the passing of the Live Stock and Live Stock Products Act in August, 1917. In the initiation of this legislation and in the preparation of the draft Bill, the branch has been in close correspondence with, and has received the support and advice of, representative live stock men of Canada, special thanks being due in this connection to the president and executive of the Western Canada Live Stock Union for their counsel and aid.

In addition to the attention which has been directed to live stock markets, special work has been undertaken, having for its object the improvement of methods employed in the marketing of live stock products. The department has been convinced that a profitable and expanding export trade can be very effectively advanced through the exercise of supervision in the marketing of the product such that standard grades may be set respecting quality, uniformity, weight, methods of packing, etc., upon which the importer may confidently rely. With the view of meeting this need, an initial move has been made through the adoption of special measures relating to the egg trade. The purpose of the department in this direction has been given definite effect through the authority which is taken under the Live Stock and Live Stock Products Act, to require that all eggs intended for export shall be inspected before shipment. This authority covers both interprovincial and export movement, and provides that the inspection shall be on the basis of certain standards agreed to as between the producer, the produce trade and the department. It is believed that this legislation will go far toward improving and stabilizing the quality of our export shipments and in promoting the development of a trade which should satisfactorily compete with other exporting countries.

HORSE DIVISION.

FEDERAL ASSISTANCE TO HORSE BREEDING.

The intention of this policy is to encourage the farmers and breeders of Canada to work for the betterment of the horse industry by making use of sound, individually excellent pure-bred sires. With this purpose in view the policy was inaugurated in 1915. In that year only nine clubs qualified. The next year this number was increased by four. In 1917 over one hundred clubs were organized and of these ninety-nine were approved. The outlook for the season of 1918 is that there will be in the neighbourhood of two hundred clubs hiring approved stallions.

The scheme, as anticipated, has proven to be very popular. It enables districts to procure a much better class of sire than heretofore, and at the same time encourages importers to bring out a better class of horse and also enables owners to keep them profitably. With a large increase in the number of clubs it has become more imperative that a careful inspection be made of each stallion, also that the working of each club be closely supervised, otherwise the original intention, namely to encourage the use of only the best stallions and thus improve the horse industry, will be defeated. This policy of close supervision has been concurred in by some of the largest stallion owners as well as the oldest and most experienced horsemen of the country.

SESSIONAL PAPER No. 15

The branch has learned from inquiries and other sources that breeders through being able to secure the services of good stallions are looking for and wherever possible purchasing good pure-bred mares. Several claim that they would have purchased pure-bred mares before, had it not been for the difficulty of having them mated with a horse that should work improvement rather than deterioration in the offspring. This alone should result in the raising of a goodly number of high-class pure-bred stallions and mares and eventually in not only the general use of better sires but also will be the means of attracting foreign buyers.

DISTRIBUTION OF PURE-BRED STALLIONS.

At the end of the season of 1916 the branch decided to cease buying stallions to loan to associations and, as opportunity offered, to sell those that were on hand. A number have been disposed of; the rest are being loaned as heretofore to associations. Many of the districts where associations were first formed have given up the stallions and formed clubs. The horses thus released have been moved to more outlying sections where their services are greatly needed and where in many cases, but for this help farmers would be forced to use grade or scrub sires. This is particularly true of the four western provinces where by far the larger number of these horses are located.

The stallions have been particularly healthy, and after five years during which time one hundred and fifty-six horses were purchased and loaned under many and varying conditions, only fourteen have died. They have also proven to be sure foal-getters and have left a high percentage of useful colts in the districts where they stood for service. The value of pure-bred blood has been widely demonstrated; also what can be done through the farmers of the district working together and obtaining the use of good sires. The fact that there are to-day so many clubs in the West has been due in no small measure to the results obtained through the associations formed for the purpose of obtaining and caring for Live Stock Branch stallions.

CATTLE DIVISION.

DISTRIBUTION OF PURE-BRED BULLS.

On December 31, 1917, the total number of bulls purchased by the Live Stock Branch, since the inauguration of the distribution policy in 1913, totalled 1,897. These bulls are loaned only to specially organized associations in newly settled districts and backward sections in some of the older provinces where farmers are unable to purchase pure-bred sires for themselves. The improvement of the live stock of the districts which have been using the department's bulls for several seasons is already very apparent and has created much favourable comment. In fact, the effect of the policy has been its sole advertisement since 1914, and each year the branch has been forced to set a limit upon the acceptance of applications, owing to the impossibility of securing a sufficient number of suitable bulls to supply all associations desirous of obtaining assistance. In many districts, associations to which bulls were loaned during the first few years that the policy was in inauguration have since advanced to the

point where the increased size of their herds has warranted the purchase by individual members of pure-bred sires of their own. In such cases the department's sires have been returned by the associations with expressions of appreciation of the benefit derived from their use. A considerable reserve of bulls for use in more needy districts is thus annually created.

It is of interest to note that when a bull's usefulness as a sire is over he is by no means a total loss to the department. In the calendar year of 1917, 217 bulls were sold for beef purposes. The net proceeds received from the sale of these bulls amounted to 61 per cent of their original cost price as registered sires.

The following table indicates the total number of bulls on hand December 31, 1917, and the total number of bulls of each breed standing with associations on that date:—

Breed.	B. C.	Alta.	Sask.	Man.	Ont.	Que.	N. B.	N. S.	P.E.I.	Total.
Shorthorn.. .. .	27	226	270	102	83	134	2	11	16	871
Ayrshire.. .. .	12	1	3	...	6	217	14	23	6	282
Holstein.. .. .	12	5	11	8	14	49	2	3	2	106
Hereford	1	20	21	8	1	4	..	1	..	56
A. Angus... .. .	2	8	10	6	..	...	..	..	..	26
Fr. Can... .. .	...	...	...	...	..	35	..	..	..	35
Jersey	10	...	...	...	..	1	..	2	..	13
Guernsey	3	...	...	...	..	...	..	2	..	5
R. Polled	1	...	2	1	..	...	..	..	..	4
	68	260	317	125	104	440	18	42	24	1,398

Bulls in feeding stables which were afterwards loaned in 1918 distribution:—

Shorthorn.. .. .	12
Ayrshire.. .. .	2
Hereford.. .. .	2
Total.. .. .	16

Total number of bulls on hand on December 31, 1917, 1,414.

CARLOT POLICY.

Under the terms of the Carlot policy the Live Stock Branch has paid reasonable travelling expenses of a farmer or the authorized agent of a number of farmers in any section of Canada who purchased one or more carloads of breeding stock (horses, cattle, sheep or hogs) in any part of the country, or of feeding and stocker cattle at stockyards in Western Canada, provided such stock was not purchased for speculative purposes.

During the fall of 1916, and throughout the season of 1917, the Carlot policy was particularly effective in turning back to country points in Western Canada, an increasing percentage of the stocker and feeder cattle, as well as young heifers and ewes offered for sale at central stockyards. In 1915, in which year the application of the policy on stockyard purchases was not allowed, 82 per cent of the stockers and feeders received at the Winnipeg yards were shipped south. In the fall of 1916 the benefit of the policy was allowed on stockyard shipments. In that year only 42 per cent of the receipts were exported to the United States, while in 1917 only 30 per cent went south, despite the fact that the total receipts for this class of cattle were 50 per cent greater in 1917 than in 1916.

During the calendar year of 1917, 11,332 steers, 10,411 heifers, 1,800 sheep, and 470 hogs were purchased under the terms of the Carlot policy. Since October 10, 1916, on which date special application of the policy on stockyard shipments was first allowed, 37,973 head of cattle, sheep, and swine, valued at \$2,094,000, have been shipped under the terms of the policy to farms in Western Canada alone. The cost to the department of the assistance rendered on these shipments averaged only 56.4 cents per head.

In the fall of 1917 the Free Freight policy was inaugurated by the Live Stock Branch in co-operation with the railroad companies of Canada, to supplement the Carlot policy in preventing, as far as possible, the slaughter or exportation of useful heifers, young ewes and young sows offered for sale on the open markets at central stockyards.

As a result of the introduction of this policy the demand for breeding females at the different central stockyards has, in practically all cases during the past six months, exceeded the supply. The policy was introduced on September 21, 1917, and between that date and March 31, 1918, shipments returned to country points under its terms were as follows:—

Name of Stockyards.	No. of Cattle.	No. of Ewes.	No. of Sows.
Edmonton..	2,865	848	149
Calgary..	3,509	5,154	...
Winnipeg..	4,885	1,347	191
Toronto..	1,032	3,855	...
Montreal..	164	357	...
Total..	12,455	11,561	340

RECORD OF PERFORMANCE.

Breeders of dairy cattle are now depending to a great extent on the information derived from the Record of Performance test to enable them to select stock which will improve their herds both in milk and butter fat production.

During the past year, there has been considerable discussion in the dairy papers regarding the long-and-short-time tests, and the consensus of opinion is much in favour of the former.

9 GEORGE V, A. 1919

The members of the various Dairy Breeders' Associations at their annual meetings in February of this year discussed the Record of Performance test and as a few of the members were somewhat in favour of shortening the period of test from 365 to 300 days, representatives of each association were appointed to meet together and discuss the matter. A meeting of these representatives was held at Toronto on April 5 last and, after a full discussion, it was decided that the existing rules and regulations were in the best interests of owners and their cattle.

The Ayrshire, Holstein-Friesian, and Jersey Breeders' Associations are now giving valuable prizes annually for the cows standing highest in each class of the Record of Performance.

The following is a brief summary of the work for the year:—

Breed	Number Cows Entered.	Number Cows Qualified.	Number Bulls Qualified.
Ayrshire.. . . .	614	175	4
French-Canadian.. . . .	21	14	..
Guernsey.. . . .	19	5	..
Holstein-Friesian.. . . .	540	173	7
Jersey.. . . .	246	68	..
Shorthorn.. . . .	153	53	3
Total.. . . .	1,593	488	14

APPENDIX.

The records tabulated in the appendix are for cows which have produced sufficient milk and fat to qualify, but which have failed to freshen within fifteen months after the commencement of the test:—

Ayrshire.. . . .	30
French-Canadian.. . . .	3
Holstein-Friesian.. . . .	49
Jersey.. . . .	7
Shorthorn.. . . .	14
Total.. . . .	103

SHEEP, GOAT AND SWINE DIVISION.

DISTRIBUTION OF RAMS AND BOARS.

The policy of loaning pure-bred rams and boars to farmers' associations has now been in operation for five years. Assistance of this nature is confined to districts where the farmers have difficulty in securing well-bred sires, or are in financial circumstances which restrict their ability to purchase the most suitable type of breeding male. In pursuing this work, it has been the purpose of the department to limit an association to a single breed, and advise persistent use of the original selection. Adherence to this system by societies has already shown results of the greatest benefit in fostering not only a keen desire amongst members to produce a better class of live stock but in creating, as well, a uniform type within a district. An advance toward the establishment of the community system of breeding, which obtains so satisfactorily in Great Britain, is a direct result of this policy of the department.

SESSIONAL PAPER No. 15

Upward of 1,700 rams and 500 boars have been bought and distributed since the inception of this policy. As these animals have gone chiefly to newly settled and outlying districts their use has been productive of not only a larger number but also a very much improved quality of both sheep and swine.

The tabulated statement following shows that all provinces to a greater or less degree took advantage of and were benefited by the services of these animals:—

BOARS loaned to associations of farmers. (Corrected to January 1, 1918.)

Breed.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Total.
Yorkshire	2	10	4	116	19	9	24	21	4	209
Berkshire	6	1	1	6	16	16	38	52	9	145
Pol. China.. .. .	..	..	..	..	1	1	9	4	1	16
Duroc Jersey .. .. .	..	..	..	..	..	1	7	17	3	28
Ches. White .. .. .	..	5	1	35	4	..	..	..	1	46
Tamworth.. .. .	..	..	..	5	..	2	1	1	..	9
Total.. .. .	8	16	6	162	40	29	79	95	18	453

RAMS loaned to associations of farmers. (Corrected to January 1, 1918.)

Breed.	P.E.I.	N.S.	N.B.	Que.	Ont.	Man.	Sask.	Alta.	B.C.	Total.
Shropshire.. .. .	86	108	23	233	36	14	5	88	1	594
Oxf. Down... .. .	32	222	12	97	8	40	2	105	1	519
Leicester.. .. .	15	8	14	279	63	7	4	..	..	390
Cheviot.. .. .	5	4	3	21	..	..	..	..	..	33
South Down.. .. .	8	19	1	12	2	..	..	..	4	46
Hampshire.. .. .	..	..	7	62	..	..	..	..	..	69
Lincoln.. .. .	..	..	3	14	4	..	..	..	..	21
Suffolk.. .. .	..	..	..	..	..	6	..	..	..	6
Cotswold.. .. .	..	..	..	1	2	..	..	..	..	3
Total	146	361	63	719	115	67	11	193	6	1,681

CO-OPERATIVE MARKETING OF WOOL.

The selling of wool co-operatively on a graded basis has shown a most wholesome increase since its inception in 1914. In 1914, 206,129 pounds of wool were graded for societies organized in four provinces, namely, Quebec, Ontario, Manitoba, and Alberta. In 1915 the number of organizations formed for this purpose was increased to nineteen. Approximately 420,000 pounds were classified and offered for co-operative sale. In 1916 this amount had reached the total of 1,721,598 pounds, and every province was represented. This year the total graded was 2,097,909 pounds with a value of \$1,321,682.67.

Previous to the shearing season a public warehouse for wool storage was established in Toronto, to which associations could ship in the event of their having difficulty in disposing of their clips at point of collection. Southern Alberta and southern Saskatchewan associations, representing approximately 900,000 pounds of wool, took advantage of these storage facilities, shipping their wool to Toronto and putting on sale their product at this point. The average price obtaining over Canada for wool sold co-operatively was in the neighbourhood of 63 cents.

EXHIBITION WORK.

During the year, exhibits illustrative of sheep husbandry and wool in all its various stages of manufacture were exhibited at the principal shows throughout the

9 GEORGE V, A. 1919

Dominion. At each show inquiries for sheep literature resulted in thousands of bulletins and pamphlets on sheep subjects being distributed.

At Toronto, the exhibit was visited by thousands daily, while many returned for a second inspection. It covered a wide field. The various diseases and insect parasites which afflict sheep were illustrated by stereopticon views; proper housing, care and management were illustrated by model sheep barns, racks, troughs, pens, dipping tanks, and fences. These attracted the attention of the farmers generally, and were of particular interest to the practical sheepman. The care and handling of fleeces and the various stages in the manufacture of woollen goods were also shown. A large exhibit in itself of woollen goods containing cloth of various kinds, and rugs of beautiful design added to the attractiveness of the display. Every feature of this exhibit was interesting and instructive, but no part drew greater crowds or aroused more enthusiasm than the practical demonstration of the old and new methods of manufacturing wool into cloth.

On one side, two women were to be seen carding wool, making it into rolls, then spinning and afterwards weaving it into cloth. The cards, spinning wheel, and loom they were using were somewhat over one hundred years old. On the opposite side, the same processes were demonstrated but in a very different way. The latest machines man's ingenuity has invented were doing the work. The official in charge, who had come direct from one of the largest mills, spent his time in explaining to all who were interested the latest methods now employed in manufacturing wool, and how one man could look after a number of machines capable of doing the work of a score or more people under the old system.

This exhibit was given favourable notice by the press, and was highly commended by hundreds of the visitors, some of whom went so far as to say that it was one of the best, if not the best, on the grounds; in fact, this view was also concurred by some of the officials of the Great Show.

GOAT INSPECTION.

During recent years, the number of goats kept in Canada has greatly increased. In order to keep record of their breeding, it was found necessary to open a Herd Book. Before doing so, it was necessary to make an inspection to ascertain what animals were eligible to be taken in as foundation stock. This work was carried out by an officer of the Sheep Division who inspected goats from Cape Breton to British Columbia.

INCREASED HOG PRODUCTION.

A campaign for an increased production of hogs was undertaken, following a statement by the Food Controller as to conditions in Europe, and the urgent need for an increased supply of bacon and pork products by the allied countries on that continent. For the purposes of organization, the Live Stock Commissioner called into conference representatives from the various provinces, including representatives of the provincial Departments of Agriculture. The Food Controller was also in attendance, and the responsibility resting upon Canada in making up the needed food supply as related to meats and fats was shown. Discussion as to ways and

SESSIONAL PAPER No. 15

means followed, and, as a result, assurance was given by the provincial representatives that the whole organization of the various provincial Departments of Agriculture would be utilized to the fullest extent in placing before the people of each province the information received and brought out in the discussion at the conferences. The representatives went immediately and systematically to carry the word direct to practically every farm in the Dominion. The assistance of farmers' organizations, as also of associations connected with the live stock industry was secured, and the support of agricultural and other newspapers was heartily given. The Live Stock Branch having become responsible for the campaign, which was of a Dominion-wide nature, was authorized to share a portion of the provincial expenses, so that effectiveness would be assured. A series of display advertisements was prepared and published in the agricultural papers, and papers having special agricultural pages. These advertisements were afterwards distributed in the form of posters to all the branch banks in Canada. The support of the banks was solicited, and the response was hearty and unqualified. As a result of the co-operation of these various bodies, the facts of the situation with regard to the need for increased hog production were plainly, dispassionately, and thoroughly placed before the live stock producers of Canada. A response was given and, taking the country as a whole, there is confidence that during the coming season there will be an increase of at least 15 to 20 per cent over the killing for the same period of the previous year.

POULTRY DIVISION.

While the number of poultry in Canada has not materially increased during the past year, it is estimated that the value of eggs and poultry marketed was between seventy and seventy-five million dollars, of which eggs represented from fifty-eight to sixty millions. This is the result of the notable increase in the value of the product and the better quality of the stock being kept. Prior to the commencement of the war, Canadian consumptive requirements absorbed all of the supply, but with the increase in production that has taken place since 1914 Canada has been able to ship to Great Britain annually from three to five million dozens.

SPECIAL POULTRY ADVERTISING CAMPAIGN.

A special advertising campaign to increase egg and poultry production was put on last spring coincident with and supplementary to the production campaigns carried on by the provinces. Pointed advertisements, with suitable illustrations, were run for a period of one month in the principal agricultural and poultry papers and supplemented by the wholesale distribution to banks, post offices, railway stations, and other public institutions of a placard setting forth the need and the possibilities of increased production. Very satisfactory results were obtained in the way of increased hatchings, especially in the western provinces, Ontario, and Prince Edward Island.

EGG TRADE IMPROVEMENT.

Early in the egg trade improvement campaign carried on by the department during the past few years, it was apparent that maximum results could not be obtained without bringing to bear some specialized effort in an administrative capacity.

The wholesale trade was anxious that legislation be provided that would make it an offence for any one to offer for sale eggs unfit for food. No action was taken, however, other than to point out that this matter was covered by the provincial and municipal health Acts, and the Adulteration Act on the Federal statutes; the feeling being that it would be more in the national interest to standardize and improve the quality of the good eggs than for the department to concern itself particularly with the negative side of the problem. With this end in view there was included in the "Live Stock and Live Stock Products Act," passed by Parliament in the last session, a clause prescribing the manner in which eggs and poultry, etc., may be standardized or graded, and also the kinds of packages which may be used and the method in which such packages shall be branded, marked or labelled.

Under the provisions of this Act, regulations have been prepared which provide in detail, standards for the Canadian eggs and also require that the packages containing Canadian eggs intended for export be marked with the words "Canadian eggs," and with the class and grade of the eggs contained therein. Similar provisions are also included covering interprovincial shipments of eggs in lots of one hundred (100) cases or more.

CO-OPERATIVE MARKETING OF EGGS AND POULTRY.

The high prices prevailing for eggs and the keenness of competition for eggs of high quality has given a strong impetus to co-operative organization during the past year, and this, together with the assistance extended by the department, has led to the organization of many new units, and also to a marked increase in the membership of the older associations.

One of the best testimonials for the utility of co-operative effort in the way of egg trade improvement is the fact that the best eggs now available in Canada in car lots come from the province of Prince Edward Island, the point where co-operative marketing of eggs and poultry has reached its highest state.

In Ontario some centralization of effort has taken place, and the way has been paved for further progress in this direction. In Alberta the receipts of eggs at the central candling station this spring are very greatly in excess of last year while the number of shipping points has increased to nearly one hundred.

STOCK IMPROVEMENT.

An important development during the past year, a direct outgrowth of the co-operative work, has been certain activities along lines of stock improvement and flock inspection. It had been evident for some time that a large percentage of the lower grade eggs and poorer quality of poultry received at the central grading stations was due to the undersized, mongrel stock kept by many of the members. The importance of pure-bred stock of desirable varieties was strongly emphasized,

SESSIONAL PAPER No. 15

and a plan outlined whereby the best in each community could be utilized to improve the whole. At the suggestion of the department, certain of the associations announced to their members that they were prepared to supply eggs for hatching from pure-bred flocks, that those who wanted eggs were to make application to their secretary, and that those wishing to participate in the distribution were to make application to have their flocks inspected, the understanding being that the department was to supply an inspector. The result has been very satisfactory, several hundred farmers having made definite application for an officer of the department to visit them and advise as to the quality and condition of their flock, the officer at the same time indicating whether or not it was of a standard to warrant approval for participation in the distribution scheme

EGG AND POULTRY MARKETS REPORT.

With the rapid expansion of the poultry industry in recent years the question of markets and the maintenance of fair prices to producers has become of increasingly great importance. Investigations carried out by officers of the Poultry Division previous to the war pointed to a very one-sided argument for the producer in marketing his product. The produce trade was fully informed regarding the possible demand and market fluctuations, while producers as a whole had little or no first-hand information. Price largely controls production, and it was felt that by placing the producer on the same intelligent plane as that held by the dealer, producers could be given that confidence in the future of the market which would insure a constant and steadily increasing supply.

To this end, for some time officers of the Poultry Division had been quietly working on a form of intelligence service to meet this contingency, and with the commencement of the fiscal year it was decided that the intelligence service had reached a point that some publicity might be given to the reports then being prepared. That departmental activities along this line are well taken is evident by the keen demand there has been for this report since it was issued, and from the expressions of appreciation received from producers, co-operative associations, country merchants, and also the trade, there is no doubt that the egg and poultry markets' report fills a long-felt want.

The main report is compiled and mailed on Tuesday of each week, and is sent only to those making application for it. In addition, a daily report is now being prepared and is sent free by mail to all those desiring, or by telegram "collect."

THE EGG EXHIBIT.

Continuing the policy of setting forth by means of exhibits various phases of departmental activity, "Co-operation in Marketing" was the topic featured in the principal exhibit sent out in the spring of 1917. Flanked on either side by panels illustrating the open market of Egypt and the co-operative system of Denmark, the centre panel was devoted to a large map of Prince Edward Island, and by means of

9 GEORGE V, A. 1919

small electric lights the locations indicated of the fifty or more local units now operating and known collectively as "The Prince Edward Island Co-operative Egg and Poultry Association."

The object of the exhibit was to bring to the attention of the people in Canada the advanced system of co-operative marketing in operation on Prince Edward Island, and to show how producers in other sections can work along similar lines for the ultimate benefit of the individual and the community.

FEDERAL AID TO FAIR ASSOCIATIONS.

Similar assistance to Fair Associations throughout Canada has been granted as in the case of the past two years. That the institution of the policy was a wise undertaking has been amply demonstrated by the support and stimulus which has been given to live stock production and distribution through the activities of fair associations, many of which would otherwise have found great difficulty in continuing operation. Particularly has this been the case in Western Canada, where important live-stock meetings have been held and extensive sales of pure-bred live stock conducted. The interest and enthusiasm which has been developed at both shows and sales, together with the business transactions which have been fostered in connection therewith, have given a great impetus to the live-stock industry in both Eastern and Western Canada. The fairs also are progressively developing educational features which are of growing importance.

There were in all thirty-three fairs which participated in the aid granted during the past year, the total amount of the grants aggregating \$133,481.64.

MARKETS INTELLIGENCE SERVICE.

This service was organized for the purpose of supplying information to the producer which would assist him to market his live stock with an intimate knowledge of conditions affecting the market. The work first, has naturally centered around the large live stock markets at Montreal, Toronto, Winnipeg, Edmonton, and Calgary. The live stock trade of the country is centered about these yards, and transactions and operations there act as an indicator of the general market situation. These markets, therefore, have been made use of as the principle source of information until such time as the work may be sufficiently extended to admit a more direct communication with the producer. Representatives have been located at each of these yards, whose duty it is to supply details as to transactions and make an interpretation of the trading conditions found there. The information includes the grading and number of live stock received, the district from which they came and the disposition made of them, whether to the abattoir, back to country points for feeding, or exported. Details are given as to sale prices for each of the different grades; this includes the high and the low levels for each grade, the range within which the large proportion of any particular grade has been sold, and the average price for each grade of live stock. The market comment covers general information with respect to the

SESSIONAL PAPER No. 15

market which cannot be statistically classified. These reports after being received are classified and co-ordinated, and distributed through the agricultural press by means of a weekly letter supplemented by a classified statement covering grading, prices and disposition. Similar reports are issued at the end of each monthly period, while a statement covering the calendar year of 1917 was issued the first week in January.

While the special duties of these representatives are in connection with the Intelligence Service, they have been in a position, and have taken advantage of it, to be of very material assistance to many of those who have business to transact at the yards and who are unfamiliar with the ordinary procedure of doing business there. They are in an exceptionally good position to be of service to those wishing to secure breeding or feeding stock. Many commendatory statements have been made by those who have availed themselves of the services placed at their disposal in this way. Their services have also been used in carrying out the different policies of the Live Stock Branch in operation at stock yards.

FEED DIVISION.

During the late summer and fall of 1917, there occurred a great shortage of cattle feed, and the situation became quite serious. Practically all sections of Canada were directly affected, and a curtailment of live-stock production seemed imminent. The demand for mill feeds and other by-products greatly exceeded the supply, and it soon became apparent that something should be done to assist the feeders to procure their requirements.

It having been previously determined, by most careful experiment, that a certain portion of the screenings from our western grain possessed excellent feeding value, consequently it was thought that this material should be used to offset, to some degree, this extreme shortage. To this end a conference was held at Winnipeg, on September 25, of representatives of the western grain growers and live stock associations, together with representatives of the terminal elevator companies, when the matter was thoroughly discussed. Following this, the question was again considered at conferences held at Ottawa, where both eastern and western feeders and breeders were well represented. It was then decided that these screenings should be utilized, and arrangements were made whereby the department agreed to take over from the elevator companies, at a fair valuation, all re-cleaned screenings, and dispose of same direct to farmers and farmers' organizations at cost.

These screenings were composed largely of broken wheat and wild buckwheat, together with a small percentage of chaff, wild oats, and other seeds. The chemical analysis of this mixture showed it to contain 14 per cent protein, 5 per cent fat, and 8 per cent crude fibre. The feeding value proved to be exceptionally good, and excellent results were secured, especially when fed to hogs.

The demand for this grade of feed was considerably greater than the supply, this being especially the case during the winter months, when feed was very scarce, and bran and shorts were practically unobtainable. Over 150 carloads of these screenings have been sold and distributed.

9 GEORGE V, A. 1919

The amount of screenings procurable, however, proved insufficient to meet our total feed requirements, and consequently it was necessary to make arrangements to provide for the purchase of other feeds, domestic and foreign, that might be available from time to time. The needs of the dairymen had to be considered, and to this end approximately 7,168 tons of linseed oil cakes were purchased and distributed. The demand for corn was also very great, and arrangements were made with the United States Food Administration to permit of the importation of an adequate supply. At first certain difficulties were experienced in moving this grain, on account of railway and other embargos, but these were gradually overcome, and approximately 152,599 bushels were imported and distributed to sections where the demand was greatest.

In addition to the feeds already mentioned, 127 carloads of bran and shorts were purchased and distributed at cost. However, when the embargo on mill feeds was made absolute, the handling of bran and shorts was discontinued.

The Feed Division has recently undertaken a thorough investigation of all feeds now being offered for sale in Canada, it being the intention to maintain a constant and careful inspection of same to ensure the feeders against fraud by insisting that the various standards required or guaranteed be strictly adhered to.

DOMINION EXPERIMENTAL FARMS AND STATIONS,

In addition to the regular activities of this branch, which may be briefly described as the carrying on of experimental work in all the main lines of agriculture on all the fully established Farms and Stations, the conducting of special research work in the laboratories at the Central Farm, and the clearing and equipping, as rapidly as may be, of the newer Experimental Stations, must be added some special lines of work conducted last year and arising from war conditions. These are dealt with more fully further on in this report under the headings of the divisions having direct supervision of the work and need only be mentioned here.

The war demand for flax products has been steadily increasing, and every effort has been made to promote the growing of flax for fibre. The flax mill at the Central Farm has been completed, and is giving satisfaction. Excellent samples of fibre have been secured from experimental flax plots located in various sections of Eastern Canada. The question of flax harvesting machinery has been studied and progress made in the search for a practical machine. Interest in flax growing has been stimulated by organization meetings, publications, and press articles.

Steps have been taken to meet the shortage of root seed by growing large quantities of stecklings for seed production. Similar arrangements have been made for vegetable seed growing and it is expected that by this means, a large proportion of Canada's seed demands will be met in 1919.

The vacant-lot gardening movement has been given stimulus and aid by the Horticultural Division, through lectures, publications, and practical demonstrations.

A series of demonstrations in canning fruits and vegetables was given at the Central Farm during the summer and early autumn. These were well attended, and great interest was shown.

SESSIONAL PAPER No. 15

At the Plant Pathological Laboratories, those at Charlottetown, P.E.I., and Fredericton, N.B., continued the investigation into potato diseases, doing a large amount of field inspection work in connection therewith. At St. Catharines the officer in charge was principally engaged in the work of eradicating the white pink blister rust where found on currant bushes in that district. The laboratories at Brandon and Indian Head were engaged in the preliminary studies of rusts attacking cereals on the prairies and in working out a basis of co-operation with the provincial authorities for wider investigations into this subject.

During the year the following publications have been issued or are now in the press:—

The Annual Report of the Experimental Farm for 1916-17.

In the Regular Series of Bulletins—

No. 90. The Potato in Canada. A popular edition of this bulletin has also been issued.

In the Second Series—

No. 32. Manuring of Market Garden Crops.

33. Black or Stem Rust of Wheat.

In pamphlets—

No. 15. Digging and Storing of Potatoes.

16. Finishing Lambs for the Block.

In Special Circulars—

No. 11. Barnyard Manure.

12. Every Gardener his own seed Grower.

13. The Milking Machine.

14. Fertilizer Economy in War Time.

15. Self-feeder for Hogs.

16. Labour saving on the Farm.

Besides the publications listed above, over one hundred press articles on various agricultural subjects have been distributed to the Canadian press, and three issues of "Seasonable Hints" have been sent out.

Owing to the backwardness of the spring of 1917, and the consequent delay caused in seeding, many farmers found it impossible to sow as much wheat as they intended and a relatively larger acreage was devoted to later sown crops. While the grain yield in the Prairie Provinces was lower than usual, owing to severe frosts in May, and continued dry weather until just before harvest, the grading quality of the crop was excellent, and this, together with the further increase in prices, considerably offset the low yields. The season in the Maritime Provinces and Quebec was a poor one, but in Ontario general conditions were excellent, and the season was one of the best on record.

The area in the Dominion under root and fodder crops showed an increase of approximately 700,000 acres over 1916, the increase in value of these crops being \$22,344,900. Although the yield per acre of potatoes was the lowest on record, a largely increased acreage and higher prices caused the total value of this crop to be nearly \$30,000,000 greater than the previous year.

While the yield of hay and clover was slightly less than the previous year, yet it was more than for any year prior to 1916.

In 1917 for the first time in Canada's history the value of her field crops exceeded one billion dollars, the total value being \$1,144,636,450, as compared with \$886,494,900 in 1916 and \$825,370,000 in 1915.

Below are tabulated some data on the yields and value of the principal field crops of Canada in 1916. A table is also given showing the numbers of the principal classes of live stock in the Dominion during 1913-17, inclusive.

AREAS and Estimates of Yield and Value of Field Crops, 1918.

Crop.	Area.	Yield per Acre.	Total Yield.	Weight per Measured Bushel.	Average Price per Bushel.	Total Value.
	Acres.	Bush.	Bush.	Lb.	\$	\$
Fall wheat.....	725,300	21.50	15,533,450	59.37	2.08	32,336,900
Spring wheat.....	14,030,550	15.50	218,209,400	59.48	1.93	420,701,700
All wheat.....	14,755,850	15.75	233,742,850	59.46	1.94	453,038,600
Oats.....	13,313,400	30.25	403,009,800	33.55	0.69	277,065,300
Barley ..	2,392,200	23.00	55,057,750	46.97	1.08	59,654,400
Rye.....	211,880	18.25	3,857,200	53.44	1.62	6,267,200
Peas.....	198,881	15.25	3,026,340	59.81	3.54	10,724,100
Beans ..	92,457	13.75	1,274,000	59.70	7.45	9,493,400
Buckwheat.....	395,977	18.00	7,149,400	46.49	1.46	10,443,400
Mixed grains.....	497,236	32.50	16,157,080	44.41	1.16	18,801,750
Flax.....	919,500	6.50	5,934,900	54.73	2.65	15,737,000
Corn for husking.....	234,339	33.00	7,762,700	56.18	1.84	14,307,200
Potatoes.....	656,958	121.50	79,892,000	.....	1.01	80,804,400
Turnips, mangels, etc.	218,233	290.75	63,451,000	.....	0.46	29,253,000
		Tons.	Tons.		Per Ton.	
Hay and clover.....	8,225,034	1.66	13,684,700	.....	10.33	141,376,700
Fodder corn.....	366,518	7.34	2,690,370	.....	5.14	13,834,900
Sugar beets	14,000	8.40	117,600	.....	6.75	793,800
Alfalfa.....	109,825	2.39	262,400	.....	11.59	3,041,300

NUMBER of Farm Live Stock in the Dominion, 1913-17.

Live Stock.	1913.	1914.	1915.	1916.	1917.
Horses.....	2,866,008	2,947,738	2,996,009	3,258,342	3,412,749
Milch cows	2,740,434	2,673,286	2,666,846	2,833,433	3,202,283
Other cattle.....	3,827,373	3,363,531	3,399,155	3,760,718	4,718,657
Sheep	2,082,381	2,058,045	2,038,662	2,022,941	2,369,358
Swine.....	3,448,326	3,434,261	3,111,900	3,474,840	3,619,382

EXPERIMENTAL STATION, CHARLOTTETOWN, P.E.I.

Work on the land started on May 3, and both wheat and oats were sown on the 8th of that month. Favourable growing weather in June, July, and August caused all crops to mature satisfactorily, although the wheat crop was a little below the average owing to insect pests and fungous diseases. Hay turned out better than was expected. Potatoes gave a good yield and were free from blight, while the crops of roots and corn were exceptionally good. Twenty acres of mangels were grown for seed.

A number of steers and lambs were purchased in the fall, for experimental feeding during the winter, and all live stock have wintered well.

EXPERIMENTAL STATION, KENTVILLE, N.S.

Up to the end of April most of the land at the Station was too wet to be worked, and heavy precipitation in May retarded seeding operations considerably. Bright

SESSIONAL PAPER No. 15

weather during the latter part of June materially assisted crop growth. Rainy weather during July and August held back haying operations, and wind storms did considerable damage to the corn, grain and apple crops. The wheat yield, on the whole, was light, and corn and potatoes were only fairly good.

A quantity of turnips were sown for root seed production, but owing to wet weather in October, considerable difficulty was experienced in getting them off the land.

EXPERIMENTAL FARM, NAPPAN, N.S.

Dull, rainy weather in May held back seeding operations, which did not become general until the beginning of June. Twenty acres of newly cleared land were sown to turnips for seed. The hay crop was not so good as was expected. September was a fine month for harvesting, and the grain was stored in excellent condition, but the yields were light. Frost in the middle of the month caused considerable damage to vegetables and flowers, and unfavourable weather in November interfered with the harvesting of the root crop.

A new steer-feeding shed was erected during the year, and a number of steers were put under feeding test during the winter. A commencement was made in the building of a new piggery.

EXPERIMENTAL STATION, FREDERICTON, N.B.

Ploughing started on April 30, but weather during May interfered with seeding operations. Continued unfavourable weather in June retarded crop growth, especially on heavy undrained land. All grain crops were considerably below the average in yield and quality. Forty-five acres were seeded to turnips for seed production. Potatoes gave only a fair crop. A great deal of fall ploughing was done in October, and all live stock entered the winter in good condition.

Changes were made in the old cellar and store-house in order to improve the facilities for storing root crops and potatoes.

EXPERIMENTAL STATION, STE. ANNE DE LA POCATIÈRE, QUE.

As in other districts in Eastern Canada, the spring was about three weeks late at Ste. Anne de la Pocatière, and a good deal of the land intended for wheat and other grain crops was sown to roots. Owing to unfavourable weather the hay crop was of poorer quality than usual. Hoed crops did well, but grain crops were only fair. The field roots, both those sown for seed, and also those sown later for seed production, yielded well. Potatoes gave an average crop, both as to yield and quality.

Twenty-six acres of stecklings were grown, harvested, and pitted in good condition.

A new poultry house and a new piggery were built during the year.

EXPERIMENTAL STATION, CAP ROUGE, QUE.

Although the season in Central Quebec was ten days later than usual, all seeding operations at the Cap Rouge Station were finished in May. Notwithstanding the

9 GEORGE V, A. 1919

heavy precipitation, crops on the underdrained land at the Station did exceptionally well. The yield of grain was a little higher than the average, but the weight per bushel was slightly less. All other crops gave average returns.

A great deal of work with live stock was carried on during the year, and a new calf barn was built.

EXPERIMENTAL STATION, LENNOXVILLE, QUE.

The first ploughing was done on this Station on April 18, and the first seeding April 30. Cold weather in May retarded growth somewhat, but seeding operations generally were carried on under favourable conditions. Heavy precipitation during July and August interfered with haying operations, but better weather in September allowed the grain to be harvested in good condition. Most crops, however, were below the average of previous years.

The work with live stock at Lennoxville was increased during the year, and a number of steers and lambs were put under feeding test during the winter.

The buildings erected during the year include a new dairy building, a poultry administration building, a permanent poultry house and a silo.

EXPERIMENTAL STATION, SPIRIT LAKE, QUE.

Preparatory work was continued at this Station during the year. The crops grown on the cleared land were only fair, owing to unfavourable conditions. A start in livestock work was made, there being now twenty head of horses and seven cows on the Station. Work with poultry has also commenced.

EXPERIMENTAL STATION, KAPUSKASING, ONT.

The work of clearing at this Station was continued during the year, the labour of interned prisoners being utilized for this purpose. During the winter the lumber was sawn on the Station and will be used for farm buildings.

Crops were grown on some 150 acres that had been cleared previously, and gave fair returns.

A house for the foreman-manager was built during the year.

Work with live stock was carried on, there being now fourteen horses and fifty-six head of cattle kept on the Station.

EXPERIMENTAL STATION, MORDEN, MAN.

The spring was rather backward but grain seeding was finished by the middle of May. The hay crop was light owing to dry weather in June and July, but the grain crops yielded fairly well. Work in horticulture was continued, orchards and ornamental grounds being laid out and work in vegetable gardening carried on.

A flock of seventy sheep is kept on the Station, and other work with live stock includes the experimental feeding of steers during the winter.

The buildings erected during the year consisted of a granary, a sheep barn and a silo, and various repairs to other buildings were also made.

SESSIONAL PAPER No. 15

EXPERIMENTAL FARM, BRANDON, MAN.

Seeding started at the beginning of May and was completed by the end of that month. Very dry weather in May and June caused grain to be very backward and also lessened the hay crop very materially. The drought continued during July and August, and consequently the yields of all cereals were light, although the grain was of good quality. The corn crop was injured by frost.

The buildings destroyed by fire in December, 1916, were rebuilt during the year, a new cow-barn, horse stable, and utility barn being built.

A number of steers were purchased in the fall, for experimental feeding during the winter.

EXPERIMENTAL FARM, INDIAN HEAD, SASK.

The season opened favourably at Indian Head, all seeding being finished by the end of May. Although the weather during the growing season was rather dry, all grain crops gave good returns and the quality was excellent. Hoed crops and hay were a little better than expected, while potatoes gave a fair yield and the quality was good. Exceedingly fine weather in the fall allowed more ploughing to be done than usual.

As in previous years, steer-feeding experiments were carried on during the winter.

A new poultry house was built during the year, and the sheep barn remodelled.

EXPERIMENTAL STATION, ROSTHERN, SASK.

Wheat seeding was completed at the Rosthern Station by May 12, and good rains in June caused all grain and hoed crops to develop well. A great many of the trees and shrubs were found to have winter-killed, owing to the damage sustained in the hail-storm of the previous fall. Dry weather at the end of July held back growth, but better weather conditions later in the season caused the grain to fill remarkably well and the yields were found to be greater than usual, all the grain being of good quality. The yield of potatoes was also large.

Sixty steers were purchased for experimental feeding during the winter.

A new granary and a pump house were built during the year.

EXPERIMENTAL STATION, SCOTT, SASK.

The weather in April was rather unfavourable for seeding operations, but it improved in May and the grain sown on well worked fields grew rapidly. Dry weather in June and July lessened the grain yield, and this continued during August. Oats and barley gave low yields, but the wheat crop was greater than had been expected. Hoed crops and potatoes gave average returns.

A poultry house and a poultry administration building were erected during the year.

Steer feeding tests were carried on during the winter.

EXPERIMENTAL STATION, LETHBRIDGE, ALTA.

Work on the land was commenced at this station April 4, and the first seeding was done on April 7. Insufficient precipitation during June and July retarded the growth of grain crops, and although better weather was experienced in August, the yields of

9 GEORGE V, A. 1919

cereals were considerably lower than the previous years. Hay and clover gave fair returns, but alfalfa was not so good as usual. The yield of potatoes was fair.

Feeding tests were carried on with steers and lambs during the winter.

No building operations of any importance were carried on during the year.

EXPERIMENTAL STATION, LACOMBE, ALTA.

Spring work commenced a little later than usual, but favourable weather towards the close of the growing season brought the crops to maturity rapidly. The yields of cereals were a little lower than usual, but this was offset by the uniformly good quality of the grain harvested, especially wheat. The hay crop was abundant, and roots and potatoes also did well.

Work with live stock was increased at this Station during the year, a large number of hogs being fed. Steers for experimental feeding were purchased in the fall.

No building operations of any importance were carried on during the year.

EXPERIMENTAL STATION, SUMMERLAND, B.C.

Seeding commenced at this Station on April 19. The season generally was rather dry, and this resulted in the crops of grain, especially oats, being light. Clover and alfalfa were also below the average in yield. Apples gave a good crop and pears a medium one. The potato crop was below the average, many of the tubers being small. In connection with the work in root seed production, carrots and mangels were grown for seed at Summerland.

A new office building was erected on the Station during the year.

EXPERIMENTAL STATION, INVERMERE, B.C.

Spring was much later than usual, and on the non-irrigated portion of the Farm, most of the crops suffered from the drought which occurred in July and August. On the irrigated area, alfalfa and clover gave good returns, but the grain yield was rather light. The potato yield also was light, but the tubers were of good quality. Vegetables, especially tomatoes, did very well.

A great deal of work with poultry and bees was carried on during the year.

The new land recently added to the Station area was cleared in the spring.

No building operations of any importance were carried on.

EXPERIMENTAL FARM, AGASSIZ, B.C.

Although spring opened up rather late, fine weather in May allowed all crops to be sown in good condition and in fairly good time. There was a good crop of hay, which was harvested in good condition, but hot, dry weather in July and August hastened the maturing of the grain, which consequently gave light yields. The potato crop was a very good one, and the crop of roots was fair. Stecklings were grown for root seed production.

No buildings of any importance were erected during the season.

SESSIONAL PAPER No. 15

EXPERIMENTAL STATION, SIDNEY, B.C.

Favourable weather at the beginning of the season gave promise of good crops. Autumn-sown cereals yielded well, but grain sown in the spring was held back by hot, dry weather in July. The corn crop was good, but potatoes were a little below the average. Fruit also did not give such good yields as in other years. Turnips and mangels were grown for root seed production.

A new implement shed was built, and various repairs carried out on other buildings.

SUBSTATIONS.

Experimental work was carried on during the year at the Substations at Fort Smith, Fort Resolution and Fort Providence in the Northwest Territories, Beaverlodge, Fort Vermilion and Grouard in Northern Alberta, and Salmon Arm in British Columbia.

Reports and samples of grain grown at these points have been received.

DIVISION OF CHEMISTRY.

Though not differing markedly as to character as compared with that of former years, the work of this division has been more particularly directed to such matters as were connected with greater food production on the farms of the Dominion. The assistance that chemistry can give towards obtaining larger crop yields and the more profitable feeding of stock is in these days fairly well understood and widely recognized and it is gratifying to note that farmers as a class are availing themselves of the opportunity which is offered them through this Division to obtain that information which will permit them to work their farms to greater advantage and profit. Possibly the most valuable phase of this educational and advisory work is accomplished through correspondence and the examination and reporting on agricultural samples sent in by farmers. The information thus afforded meets directly the particular needs of the individual and is thus more apt to be acted upon than that which is distributed in the form of printed matter, and takes into consideration the specific condition under which the farmer is operating. It would seem reasonable to conclude that the large correspondence in such matters, in addition to the issuing of bulletins and circulars on subjects pertaining to special phases of farming, has materially assisted in the campaign for increased production of foodstuffs throughout the Dominion. In this connection it is only necessary to add that the inquiries from farmers and the samples forwarded by them for examination cover a very wide field; they relate to and include soils, naturally occurring fertilizers (mucks, marls, mussel muds, seaweed, etc.), limestones, fodders, and feedingstuffs, insecticides and fungicides, and well waters.

The samples received at the laboratories during the year number 3,849, of which about 1,300 were forwarded by farmers, the remainder being those collected and analyzed in connection with special investigations carried on by the Division.

In the work undertaken for the Irrigation Branch of the Department of the Interior, towards the classification of certain lands in irrigable areas in Alberta, good

9 GEORGE V, A. 1919

progress has been made. Fifty groups of soil, comprising 200 samples, have been submitted to analysis and reported on. The investigation, now in its fourth year, has for its chief object the determination of the "alkali," where such is present, and the reporting upon the lands in question as to their suitability for cultivation under irrigation.

With the co-operation of the Meteorological Service the investigation to ascertain the influence of climatic and seasonal conditions upon the yield and composition of wheat has been carried forward. This work involves much careful observation of a detailed and tedious character and it will be only after the results of many years have accumulated and the skilful correlation of the field, laboratory and meteorological data that we can hope to make any definite pronouncement in regard to this problem. The outlook, however, is such as to promise much valuable information.

Investigational work with fertilizers has been carried on at a number of branch farms and stations as well as on the Central Farm, Ottawa. Though it would be impossible to epitomize the results for this report, it may be stated that the returns conclusively show, that where judiciously used, and especially in conjunction with farm manures and a rational rotation of crops, commercial fertilizers may be used with profit. This conclusion is drawn more particularly from the experiments conducted in Eastern Canada and British Columbia. It is true that the price of fertilizers has greatly increased during the past year, but the increase in price of farm products and especially of those crops for which fertilizers are usually employed has proved an effective offset, so that in point of fact the profit from their use has been greater than in pre-war times when fertilizers were much cheaper.

The results in connection with the sugar beet investigation were most satisfactory. Seed of four approved factory varieties, including seed produced in Ontario, was sown on sixteen of the branch farms and stations throughout the Dominion and the product analyzed as to sugar content and purity. The past season's results constitute the twentieth record in this investigation and furnish additional evidence of the suitability of soil and climatic conditions at many widely distant points in Canada for the production of beets of excellent quality. It is particularly gratifying to note that the beets from Ontario grown seed fully equalled in sugar content and purity those from imported seed.

The eleventh year's work in the determination of the fertilizing value of rain and snow has been completed. The results indicate that the soil receives from these sources per acre per annum, approximately 6.5 pounds of nitrogen in forms available for crop use. Assigning the reasonable figures of 20 cents per pound for the nitrogen, we may conclude that in addition to its primary and all important function of supplying moisture for crop growth, the precipitation supplies per acre annually plant food worth approximately \$1.30.

Over 150 samples of well water from farm homesteads have been submitted to complete chemical analysis and reported on as to wholesomeness for family and stock use. This, as in the past, proves to be a useful work and one much appreciated by the intelligent and progressive farmer. The interest in this vital matter of a pure water supply on the farm continues to increase and undoubtedly our work in this connection is having a marked effect throughout the rural parts of the Dominion.

SESSIONAL PAPER No. 15

As heretofore help has been afforded farmers in the economical purchase and use of feeding stuffs by the analysis of samples of mill and other feeds sent in for examination. The present high prices for all classes of feeds have resulted in a number of comparatively worthless feeds being put on the market. Analysis is necessary in the majority of cases to determine their nutritive value. More than 200 samples of feeding stuffs have been sent in by farmers for analysis, from which we may conclude that farmers are awake to the assistance that chemistry affords in the economical purchase of these materials.

Satisfactory progress has been made in an investigation towards the utilization of nitre cake in the manufacture of superphosphate. Nitre cake is a waste product in the manufacture of nitric acid, now so largely employed in the preparation of explosives from Chile saltpetre. Though as yet the work has only been conducted on a laboratory scale it promises that this by-product, which at present has practically no commercial value, may be put to a very useful and profitable service in the manufacture of an important fertilizer.

Our work has been continued in connection with the official examination of flours purchased in Canada for the British War Office and civilian supplies overseas. During the year 1668 samples have been analyzed as to water-content.

The routine work for the Meat Inspection Division (Health of Animals Branch) for the year 1917-18 included the examination of 840 samples. These comprised preserved meats and sausages; lards, tallows, oils and butters; dye stuffs and colouring matters, preservatives and pickling solutions, spices and condiments, evaporated apples and canned fruit and vegetables. An additional feature during the past year has been the chemical work necessary to the proper administration of the Oleomargarine Act, this has included, among other matters, the critical examination of 150 samples of butter, fats and oils for added colour.

As required, and in so far as circumstances permitted, analytical work for the several branches of the Department of Agriculture, for the Department of Naval Service, the several commissions and boards connected with munitions and military affairs, the Food Controller's office and the Advisory Council for Scientific and Industrial Research, has been undertaken.

DIVISION OF FIELD HUSBANDRY.

The efforts of the Field Husbandry Division during the past fiscal year were devoted to investigations including soil management, crop management and agricultural engineering. A comprehensive scheme of soil cultural and rotation investigation work is under way on all branch Farms and Stations situated in the Prairie Provinces. On the Eastern and British Columbia Farms and Stations crop rotations are investigated and cultural experiments are being started as circumstances permit. At the Central Farm, Ottawa, the limited area of suitable land which can be devoted to work of this nature precludes the carrying on of several experiments that should naturally be included.

9 GEORGE V, A. 1919

Special attention is given throughout the system to the cost of production of crops, a most important factor in crop management. Data are recorded for the different crops and the extent of the influence which larger manual labour, saving implements exert in lowering the cost of cropping operations is being closely observed.

FIELD CROPS AT THE CENTRAL FARM.

A fairly successful season may be the conclusion drawn from the 1917 results for field crops on the Central Farm. Seeding commenced on April 28 and was completed May 14. Potatoes and root seed were sown towards the middle of May and corn planting was finished by the end of the month. All vegetation made slow growth on account of the cool weather but rapidly improved during the favourable weather in June. The fore part of the haying season was very wet and operations were delayed considerably; however the work was completed during the closing week of July. Grain was harvested and threshed during August and Indian corn was put in the silo during the latter part of September. October was cool and wet with much less sunshine than usual, making fall work tedious. Turnips and mangels were harvested during this month. Fall ploughing was finished early in November and some underdraining was completed.

The yields per acre for the different classes of crop were: hay $2\frac{3}{4}$ tons, oats 55 bushels, Indian corn 15 tons, and roots 25 tons.

It is gratifying to record that the interest of farmers is aroused to the importance of improved soil and crop methods. This was demonstrated by the fact that the correspondence, in answer to queries of this nature, increased 35 per cent over the previous year.

THE ANIMAL HUSBANDRY DIVISION.

The Animal Husbandry Division of the Experimental Farms has again made marked expansion in the scope of its work during the past fiscal year. The lines of work which fall to this Division are the laying out and superintending of all live stock operations, including the management and housing of farm animals, the manufacturing and marketing of their products, together with all experimental and demonstrational work connected therewith on the Central Experimental Farm, and, in consultation with the Director of the Experimental Farms and the Superintendent of Branch Farms and Stations, the laying out and supervising of similar work on Branch Farms and Stations throughout Canada.

LIVE STOCK ON THE CENTRAL FARM.

The horses on this Farm are all of draught type excepting the necessary drivers and express horses. Amongst the draught horses are a number of excellently bred Clydesdale mares of good type which are used both for general farm work and for breeding purposes. During the past year a number of excellent horse foals were born from these mares. Although in the past difficulties have been met on this and other Farms with the disease termed joint ill, apparently preventive measures are becoming more and more successful. This particular difficulty in horse raising is

SESSIONAL PAPER No. 15

being carefully studied by the Health of Animals Branch in conjunction with the Animal Husbandry Division. Feeding experiments both with working horses and breeding stock and the accumulation of data as to the costs of rearing, maintenance and developing of horse power are being continued on this Farm, as well as on the Branch Farms.

Breeding beef cattle are not maintained on this Farm owing to lack of sufficient housing accommodation and pastures. However, during the past year two carloads of choice Western steers purchased on the Winnipeg market were finished in corrals provided for this purpose and, in spite of the peculiar market conditions, abnormal feed costs and the most severe winter on record, these steers finished excellently, were sold at a reasonable margin of profit and commanded the top price on the Montreal market. This demonstration of steer finishing with only a cheap shed and corral for shelter has attracted much attention and favourable comment from Eastern farmers not acquainted with these methods.

The herds of dairy cattle have progressed rapidly during the past year. Excellent representatives may be found of four breeds, namely, Ayrshire, French-Canadian, Holstein, and Jersey, as well as a few choice grades of the Ayrshire and Holstein breeds. In spite of a most unexpected and unexplainable outbreak of tuberculosis in these herds and with accompanying losses, the total number of dairy cattle has increased materially during the past year. The average milk production per cow has again increased largely, and many splendid records have been made by animals of all breeds. Many pure-bred animals from the herds are annually sold for a moderate price, particularly to farmers in districts where the excellence of breeding will be of greatest value. A large number of experiments in the feeding, breeding and handling of dairy cattle have, as usual, been conducted during the past year. An increasing number of experiments with equipment, such as new types of milking machines, have been conducted. A series of experiments dealing particularly with the feeding and rearing of calves has been satisfactorily concluded during the past year, and provision made for the publishing of this data as a bulletin in the near future.

Experimental work along the lines of dairy manufacturing continues to hold a prominent place in the work of this Division, but the expansion of this work experimentally and commercially is largely curtailed by lack of ample accommodation in the dairy. The gross receipts from this department of the Animal Husbandry Division have again increased, and during the past year have exceeded \$11,500. From this department, as well as the other departments of this division, a large amount of information relative to production and manufacturing has been distributed, and an increasing number of free forms for the keeping of milk and feed records have been distributed to thousands of Canadian farmers.

The sheep on the Central Experimental Farm have rapidly improved both as to numbers, quality, condition and profits. Only two breeds are maintained, namely Shropshires and Leicesters. However, from these flocks a number of excellent breeding animals have been distributed to Branch Farms and breeders throughout Eastern Canada. A number of experiments in feeding, care and management of sheep have been continued throughout the year. This department has shown a net profit of over \$15 per ewe over all feed and labour charges, depreciation, etc.

9 GEORGE V, A. 1919

Swine raising has demonstrated itself as the best paying branch in this Division. Only two breeds are represented in this herd namely, Yorkshires and Berkshires. A large number of pure-bred animals of both sexes have been sold during the year for breeding purposes. A large number of feeding experiments have been conducted both under summer and winter conditions. These experiments have dealt primarily with labour-saving devices and values of home-grown roughages and grains, but have also dealt with various classes of feeds and the best methods of rearing and finishing hogs for market.

During the past year special attention has been paid to a study of all live stock feeds, whether grown or purchased, in order to obtain for immediate distribution information as to the best possible substitutes for standard live stock feeds withdrawn from the markets due to crop shortages or peculiar war conditions. In this experimental work with various classes of stock are used the by-products of terminal elevators, acetone manufacturers, coffee manufacturers and the like, and much valuable information has been distributed to Canadian farmers.

ASSISTANCE TO BRANCH FARMS.

The Dominion Animal Husbandman has visited the Branch Farms and Stations throughout Canada and continued to assist the Superintendents of these Farms. In conjunction with the Superintendents many new lines of live-stock work have been undertaken, but special attention has been paid to increasing the total production on the Farms and the studying of labour-saving devices. To illustrate: there have been installed on six of the Farms during the year, milking machines which have greatly relieved labour shortage. Again, the total hog production on all the Farms and Stations has increased over one hundred per cent, due largely to the use of self-feeding methods.

The Animal Husbandry Division has prepared a large number of plans of buildings for Branch Farms and Stations, some of which have already been approved of and erected by the Department of Public Works, while others are held in abeyance until less necessary construction work may be continued.

MISCELLANEOUS.

The regular correspondence of this Division has again increased enormously over the previous year. Every possible assistance has been given to inquiring farmers along the lines of maintenance of live stock, increasing production, methods of breeding and general management for improved health and increased profits. A most gratifying result of the work in this Division is the ever-increasing interest of the Canadian farmer in improving the convenience and sanitation of his live stock buildings. In this connection, over 500 complete plans of modern farm buildings to suit the individual needs of farmers inquiring, as well as photographs where possible and brief specifications, have been distributed during the past year.

The Dominion Animal Husbandman, as well as the three capable assistants in his Division, have judged at a large number of agricultural fairs and have addressed a large number of meetings throughout Canada, dealing particularly with increased live stock production.

SESSIONAL PAPER No. 15

HORTICULTURAL DIVISION.

EFFORTS FOR GREATER FOOD PRODUCTION.

A strong effort was made by the Horticultural Division in 1917 to assist in the movement for greater production of food, particularly of vegetables, and it is believed that much good resulted from the work done. Large numbers of pamphlets were distributed throughout Canada giving simple directions for the preparation of the soil, time and method of planting of the various vegetable crops and the best varieties to grow. Directions and formulæ were given for the protection of the plants from injurious insects and fungous diseases. Demonstrations on vacant lots were also made at various local places by members of the staff of the Horticultural Division to illustrate the best methods.

So great has been the interest in the potato and so important is the crop that a bulletin was published during the latter part of the year giving the results of experiments at the Central and Branch Farms and Stations together with directions for the growing of potatoes based on these experiments and the practice of the best farmers. This bulletin will be available for planting time in 1918 and should prove especially helpful to the thousands of persons who have begun to grow potatoes on small areas.

In order to assist in the preservation of the fruit and vegetables which were grown in 1917, a specialist in domestic science was employed for several months to experiment in methods of canning and drying and to demonstrate the methods found to be the best. Several demonstrations were given during the season, all of which were attended by a large number of persons and, at the Central Canada Exhibition, remarkably large crowds took advantage of the opportunity of seeing how the work was done. A bulletin on Canning, Drying and Storing Vegetables was prepared for the Food Controller, which was published in good time for the canning season of 1917.

Notwithstanding the many other agencies in Canada for disseminating information in regard to gardening, a very large correspondence on this subject was dealt with by the Horticultural Division during the past year.

EXPERIMENTS IN GROWING VEGETABLE SEEDS.

Special attention was again given in 1917 to the production of vegetable seeds, and experiments were undertaken with the more important kinds in order to gain further information in regard to methods of growing them. Good results were again obtained and there is strong evidence to show that home-grown seed produced under the best conditions is as good or better than that obtained from other countries. As there is liable to be a shortage of seed of biennial crops such as carrots, beets and parsnips in 1919, and as the planting of a few roots of each of these will ensure all the seed that the average person requires, a pamphlet entitled "Every Gardener His Own Seed Grower" was published, in which each grower of vegetables was urged to save a few roots from his winter's supply for this purpose. Simple directions for the planting of the roots, the care of the plants and the harvesting of the seed were given. Towards the close of the year, following an Order in Council dealing with the

9 GEORGE V, A. 1919

production of seed, by which growers were guaranteed a minimum price on certain quantities, the Horticultural Division procured seed stocks to supply those growing such seed.

FRUIT CROPS IN THE ORCHARDS AT OTTAWA.

Apples.—Although the crop of apples in the province of Ontario in 1917 was almost a total failure, the crop at the experimental farm, while much smaller than in 1916, was a fair one. Owing to the very cool spring the trees were more than two weeks later in coming into bloom than usual, and the growing season proving a relatively cool one the apples did not mature nor colour as well as in some years. The great advantage of having at least some trees of the hardiest varieties in the orchard was apparent again this year. In unfavourable seasons the hardy sorts are the most reliable. Many of the new varieties originated in the horticultural division continue promising, and some of them will, doubtless, some day take the place of inferior sorts in the trade.

Plums.—There was a medium to good crop of plums this year. A number of the European sorts which usually bear little or no fruit at Ottawa, bore well in 1917. One of the best of these is the Mount Royal, originated on the Island of Montreal. The great dependence, however, for the colder parts of Canada is still in plums derived from the American wild plums, although there is great promise in crosses between these and the Japanese varieties, the Emerald and Omaha being two of the best of such hybrids.

Grapes.—The season of 1917 was not a favourable one for grapes and most varieties under test at Ottawa did not ripen. Various methods of pruning and training are being tried in order to learn by what method ripening will be best assured in unfavourable seasons. A few of the European sorts have proved very early and ripen in lower temperatures than the American. One of the best of these is the Pearl of Casaba.

Small Fruits.—Small fruits succeed well in most parts of Canada and they have received special attention at Ottawa and on the branch farms and stations. Valuable lists of varieties have been published and best methods of growing the different kinds. There was a medium to good crop of all kinds in 1917.

BREEDING OF NEW FRUITS, VEGETABLES AND FLOWERS.

The breeding of new fruits, vegetables and flowers was continued in 1917 and interesting results were obtained from the crossing of previous years. Special attention is being paid, among vegetables, to the production of new and better varieties of beans, corn, peas and tomatoes with especial reference to earliness. Among flowers, the new cross-bred geraniums were, perhaps, the most striking new plants of the year.

ORNAMENTAL GARDENING.

Notwithstanding the war and the main energies of the staff being devoted to economic problems, the grounds have been kept in good condition and notes are being accumulated which will be of value in the future.

SESSIONAL PAPER No. 15

BRANCH FARMS AND STATIONS.

The horticultural work on most of the branch farms and stations consists in the testing of varieties and in experiments in different methods of cultivation. At the Kentville station in Nova Scotia spraying experiments have been a marked feature of the work in recent years. The greatest development in horticulture in 1917 was at the newer stations at Morden, Man., and Summerland, B.C., where the plantations were further extended and other work begun. Valuable horticultural data are being obtained at the new stations at Kapuskasing, Ont., and Spirit Lake, Que., although as yet the work is not thoroughly organized there.

The northern sub-stations have furnished valuable information in regard to growing fruits, vegetables and flowers, and this being available to prospective settlers gives them a good idea of what kinds they may hope to grow successfully.

CEREAL DIVISION.

THE SEASON.

Seeding was quite late in most parts of Canada in 1917, and, on this account, cereals, in some sections, did not have the best opportunity of making strong growth. However, conditions were usually favourable during the early part of June. Towards midsummer, crops, over a considerable area in central Canada, began to suffer from drought. This became severe in large sections of Alberta and Saskatchewan, Manitoba, however, was less affected. Some sections of Eastern Canada were troubled by excessive rainfall, and in Quebec province there were some disastrous floods.

It is obvious that under such conditions, maximum crops could not be raised. In quality, however, the grain, in most parts of Canada, was good, the wheat from the great Central Provinces being, indeed, of extraordinary high grade, far superior on the whole, to the crops usually produced; so that, while the average yield in Manitoba, Saskatchewan and Alberta was not high, the amount of first-class milling wheat produced was as great as in some seasons when much larger total yields have been harvested. Barley produced a fair yield, except where sown extremely late. Oats suffered a good deal from adverse weather conditions and a shortage of good seed oats in some localities is reported.

VARIETY TESTS.

At Ottawa, very fair yields of cereals were obtained and the tests of varieties gave about normal results. The number of varieties under test has become so large that it has been necessary to reduce the plots to one hundred and twentieth of an acre each, in order not to omit any of the varieties which are being tested. This reduction in the size of the plots has also released a small amount of land for the propagation of especially promising varieties of seed, which is wanted for trial in other parts of Canada.

9 GEORGE V, A. 1919

NEW VARIETIES INTRODUCED.

The Dominion Cerealist has just introduced a new variety of wheat, produced as a result of some of the cross-breeding work which he has been carrying on for many years at Ottawa. This wheat has been named "Ruby, Ottawa 623". It is considered by the Cerealist to be the best variety extant in the extra-early-ripening class. While it is a little later in maturing than Prelude, it is much earlier than Marquis and is expected to prove of very great value in districts where Marquis does not ripen satisfactorily. Ruby produces hard, red kernels and displays those fine qualities in milling and baking for which Canadian wheats are famous. About four hundred samples of this new variety are being distributed to farmers in those districts where it is expected to be most valuable.

Another very interesting cereal, also a cross-bred variety produced by the Dominion Cerealist at Ottawa, has been announced. This is a hulless oat called "Liberty, Ottawa 480". Scarcely any distribution of this has been possible, thus far, but provisions have been made for sending out a number of samples next season. This variety loses its hull when threshed and will, therefore, be of great value for the feeding of young chickens, pigs, etc. Its field characters are also good. While it does not produce as large a yield as the best standard sorts, it is exceptionally early in ripening and has stiffer straw than most other varieties. It may also be mentioned that this oat can be ground for household use in any ordinary small mill and produces, in this way, oatmeal of admirable quality.

FREE DISTRIBUTION OF SEED GRAIN.

A quantity of excellent seed grain for the annual distribution was obtained from the Experimental Farms at Indian Head, Brandon, Cap Rouge, Ste. Anne de la Pocatière, and Ottawa. Several thousand samples of very clean seed of high purity and fine quality are being sent out to farmers in order to give them a start in the growing of those varieties which are most suitable to their particular conditions.

MILLING AND BAKING TESTS.

The milling and baking work was resumed last December on the appointment of a new assistant. Special war problems are being studied, such as substitutes for wheat in bread making, the quality of wheat flours of different percentage extraction, etc. The usual tests of the new, unnamed varieties of wheat grown at Ottawa are also being made in order to eliminate any sorts which show poor bread-making qualities. Some tests of the cooking qualities of peas have also been carried on, in the attempt to find out to what extent variations in quality are due as to varietal differences and to differences in soil and climate.

DIVISION OF BOTANY.

In a commendable spirit of co-operation with the provincial authorities of Quebec and Ontario, it has been possible to carry on the work relating to the white pine blister rust over a much wider territory throughout these provinces. The Forestry services of both provinces placed at our disposal a considerable number of

SESSIONAL PAPER No. 15

men who collected evidence on the general distribution of this disease. From the results of these investigations, revealing the wide-spread of this rust on its secondary hosts, the cultivated and wild species of currants and gooseberries, it is feared that the control of the disease within the generally infected area will no longer be possible. This conclusion does not imply, however, that the damage so far done to the white pine resources is considerable; it rather indicates that, since the easiest means of saving the pines is the destruction of the currant, wild or cultivated, the disease now occupies an area of such extent as to render the eradication of these hosts beyond practical possibility.

Work has also been conducted in the laboratories relating to hibernation of the rust on currants, the longevity of the spores on currant and pine, the distance they are carried by the wind, and other phases which would prove useful in the ultimate establishment of certain areas in which methods for systematic control may be tried.

The necessity for increased crop production has also resulted in increased attention being paid to the control of plant diseases. In this connection, work was commenced during the year in the new western field laboratories, which are devoted to the study and control of diseases affecting grain. Grain rust causes annually considerable losses, and as yet very little is known of control measures to exert any influence over this destructive disease. There exist, however, certain factors which favour a rust outbreak, such as late seeding, the use of late varieties, unsuitable soils, the presence of the shrub barberry, and the use of inferior seed grain generally. Attention has been paid to these points in advising farmers. Luckily, the losses from rust were not severe during the year.

The potato crop, a food crop next in importance to grain in Canada, is also subject to a large number of diseases which reduce the yield or induce rotting in storage, and thus cause considerable losses of valuable food material. For several seasons past it has been demonstrated to the farmers in the Maritime Provinces that by spraying and other precautionary measures, the yield of potatoes may be profitably increased. This season similar investigations were commenced in Ontario, where much interest was taken in this work. The improvement of the potato industry largely depends upon the speedy and successful elimination of several specific diseases, such as leaf roll and mosaic, which account for more than the usual share of losses due to disease. The seed and field inspection carried on in this connection, it is hoped, will soon produce more widely beneficial results, such as have been obtained through extensive experiments.

The Central laboratory, in numerous instances, gave advice to farmers and fruit growers *re* the control of specific diseases affecting crops throughout the Dominion.

Nitro-cultures were again prepared in the laboratory, and distributed free of charge in order to give as much encouragement to the growing of peas, clovers, and alfalfa as possible. The beneficial results obtained by cultures of these nitrogen-fixing bacteria were in some instances remarkable.

A considerable number of plants were identified; increased interest is being manifested in the cultivation of medicinal plants. Several kinds of fibre plants have been tested in a small way to determine whether their introduction would likely prove of economic value.

9 GEORGE V, A. 1919

Several plots of castor oil beans were under cultivation. The oil is greatly in demand, since it seems the most suitable to withstand the great friction caused by aeroplane motors. It is doubtful whether this crop will prove of value in the Dominion as far north as Ottawa, although ripe beans were harvested.

The field laboratory at St. Catharines devoted as much time as possible to the study and control of fruit diseases. It appears that means have now been discovered for the control of peach canker, which causes considerable damage in the orchards. The manuscript for a pamphlet on tomato diseases was also prepared during the year.

The field laboratory at Fredericton reports progress in the study of potato diseases. Also, experiments were conducted relating to the control of club root.

The field laboratory at Charlottetown continued its work on leaf roll and improvement of Garnet Chili potatoes for export to Bermuda. In Nova Scotia, experiments with dusting compound for the control of apple scab were carried on.

The prairie field stations at Brandon, Man., and Indian Head, Sask., commenced work on grain diseases. In this connection may be mentioned a conference called under Dominion auspices, dealing with the organization of co-operative work on grain rust.

The divisional quarters were transferred to new offices in a remodelled building where ample accommodation will be found for some years.

Officers of the Division attended a number of conferences on white pine blister rust, on potato improvement, and the division was also represented at the annual meeting of the American Association.

To aid the campaign of greater production, a number of timely press notices were prepared.

THE DIVISION OF FORAGE PLANTS.

VARIETY TESTS.

As usual, a number of varieties of field roots and Indian corn were tested, including 31 varieties of mangels, 48 varieties of swede turnips, 13 varieties of fall turnips, 14 varieties of carrots, 3 varieties of sugar beets, and 20 varieties of Indian corn.

The yields of all-root varieties were comparatively low and, on account of lack of uniformity which was more or less noticeable in practically all varieties, definite conclusions with regard to the comparative yielding capacity of the different varieties can hardly be drawn from the results obtained this year. The lack of uniformity was especially pronounced in the mangel varieties which on the whole were so badly off type that the yields secured are practically useless as indications of the yielding capacity of the true varieties which, according to the names given, were supposed to be tested.

BREEDING.

The past year was, on the whole, unfavourable for breeding work and as, on account of the increasing scarcity in the field-root seed supply, special work had to be started to relieve the root seed situation, at a time of the summer when much

SESSIONAL PAPER No. 15

of the breeding work should have taken place, the breeding work was not pursued to the extent that under normal conditions would have been possible. However, a certain amount of breeding work was carried on, including continuation of the work with those grasses and clovers that have been worked within the last few years, and also including starting of breeding work with meadow fescue through isolation and self-fertilization of a number of specially selected types.

ROOT SEED GROWING A SUCCESS.

Several years' experience with root seed growing at the Central Experimental Farm, Ottawa, has demonstrated, beyond any doubt, that field-root seed can be grown very successfully in the Ottawa district. Large yields of mangel, swede turnip and carrot seed of excellent quality have been secured the last few years and, as far as the Ottawa district is concerned, root seed raising is beginning to pass the experimental stage.

It is thus well known that seed of first-class quality can be grown in the district, but nothing has been done to ascertain the cultural and soil conditions under which heaviest possible yields may be realized until recently.

In 1915 an experiment with planting mangels for seed was conducted. As the results indicated that the date of planting to a very considerable extent seemed to influence the quantities of seed produced, the experiment was repeated. According to our experience, the heaviest seed crops are realized when the roots planted for seed raising are set out as early in the spring as possible.

In 1915 another experiment was also started on a small scale, with a view of furnishing some preliminary data on the effect of manure and various fertilizer mixtures on root seed yields. The results of the same indicated that a heavy dressing of manure or an application of a complete fertilizer very much increased the seed yield.

In 1917 this fertilizer experiment was somewhat elaborated, different rates and combinations of artificial fertilizers being applied without manure, and also with manure at different rates. The results indicate that the heaviest seed yields may be obtained if the land is heavily manured and, in addition, is given a liberal application of a complete fertilizer.

The two chief factors that thus seem to be most essential for the realization of heavy seed crops are therefore, according to our experience, early planting and high fertility of the soil.

GRASS AND CLOVER SEED RAISING.

So far, all the seed of grasses and clovers, including alfalfa, that is produced in Canada, is harvested from fields seeded down in the manner in vogue for hay crops. In other words, seed crops are taken from ordinary hay fields allowed to go to seed. This practice allows the farmer to decide whether, under certain conditions, it would be more advantageous to harvest a hay crop or whether it would be to greater advantage to harvest a seed crop. So far, grass and clover growing for seed exclusively, is practically unknown in Canada.

9 GEORGE V, A. 1919

In 1916 an experiment was started for the purpose of ascertaining the best methods for profitable grass and clover seed raising. The results, as secured this year, indicate that so-called row seeding yields far heavier seed crops than ordinary broadcast seeding. In addition, a much cleaner seed crop is realized.

EMERGENCY ROOT SEED RAISING.

Owing to the prospective shortage in the field-root seed supply in the immediate future, the experimental farms were requested, about the middle of the summer, to arrange for seeding of considerable areas to stecklings to be used for seed raising in 1918. Accordingly, seed of the best varieties of mangels, swede turnips, and carrots then available was secured and distributed to a number of stations. On account of the late seeding, however, and also on account of the extremely unfavourable harvesting conditions in the late fall, the steckling crops secured were not in such a good condition for wintering as would have been the case under normal conditions. As a result, the areas planted to seed in 1918 will not be as large as estimated when the steckling areas were planned for.

BEE DIVISION.

Bees are now kept at sixteen of the experimental farms.

In the summer of 1917 the apiarist continued his survey of Canada, for favourable regions for abundant honey production, visiting among other places, the Rainy River and Kenora districts in Ontario and the Lake St. John district in Québec.

Co-operative experiments with experienced bee-keepers in typical localities for honey production were conducted and extended. These included East Royalty, P.E.I., Gaspereau, N.S., Amherst, N.S., Louiseville, Que., Montcerf, Que., Lytton, Que., Athens, Ont., Thornloe, Ont., Ciandeboye, Man., and Medicine Hat, Alta. All these places except East Royalty and Athens were visited by the apiarist in the summer of 1917. Much valuable information is being obtained from this work.

Experiments with fireweed (*Epilobium angustifolium*), the most promising honey plant for commercial bee-keeping at altitudes and latitudes higher than those at which clover gives best results, have been started.

Experiments in importing young bees without combs in spring, from the Southern States were continued at Ottawa, and it was found that two-pound lots received on May 9, about a week before the commencement of the dandelion honey flow, costing \$3.66 each, including express charges, after being supplied with empty combs produced about as much surplus honey as the regular wintered colonies.

Experiments having for their object the reduction of labour in the control of swarming and reduction in the mortality of bees during winter, the two principal problems in bee management in Canada, have been continued. Small out apiaries were again maintained at Kazubazua and Sully, Que.

An attractive and inexpensive container for granulated honey that had been devised at the Central Experimental Farm to meet the increased cost and scarcity of tin containers was further developed and used for a part of the 1917 honey crop produced there, with satisfactory results.

SESSIONAL PAPER No. 15

The growing importance of honey as a food and the considerably higher prices it has commanded since the summer of 1917 have brought an increased number of inquiries about bee-keeping and there has been a heavy demand for the literature on the care of bees issued by this division. Articles on bee-keeping, showing how honey production may be increased, etc., have been prepared and have been published in the bee-keeping and general press.

POULTRY DIVISION.

The work of the Poultry Division during the past year has been progressing very satisfactorily, though, owing to lack of accommodation, efforts along several lines of investigation have been considerably curtailed.

CENTRAL PLANT.

At the central plant, good results were obtained in the breeding work and an excellent crop of young stock was raised. The pullets went into winter quarters more fully matured and in better shape generally than usual, with the result of an improved winter egg yield.

The pedigree work has advanced to such an extent that for the first time it has been possible to supply Branch Farms with all cockerels from high-producing mothers. These cockerels were of an exceptionally good type and constitution, and should do much to improve the laying qualities of next years' pullets. It is expected that from these cockerels the Branch Farms will have a considerable number of breeding males to dispose of to farmers next fall.

It was found necessary to discontinue practically all of the turkey and waterfowl experiments on the central plant. Just a few breeding stock being retained. At Invermere, B.C., the turkey crop was as large as usual and investigations there show that so far the ravages of Black Head are not present.

BRANCH FARMS.

At most of the Branch Farms the year's work was satisfactory, though because of frequent changes in poultrymen it was difficult to obtain the best results in every case. During the year no less than eight changes were made among the poultrymen. Some of these through enlistment, others because we were unable to retain them.

Three new Farms were added during the year, Summerland, B.C., Scott, Sask., and Lennoxville, Que. One breed only will be kept at Summerland, White Wyandottes. At Scott, Barred Plymouth Rocks. At Lennoxville the Rocks will also be installed when the stock is obtained this summer. Winter came on before the buildings were completed here and operations will not commence until next season.

EXPERIMENTAL WORK.

Among the experimental work concerning which more data has been obtained and upon which greater emphasis is being placed are, the importance of the male to

9 GEORGE V, A. 1919

obtain high egg yield; the value of early pullets for winter egg production; the unprofitableness of late pullets as a business proposition; the value of vigour in the breeding stock; light in the laying pen during the short days; war time rations; vegetable vs. animal protein, etc.

Further experience was gained in feeding buckwheat screenings at the Central Farm and at the Maritime Farms. For the rearing of chicks it is a valuable and cheap feed, but as a scratch feed for winter use it is not suitable, though it does make a suitable mash feed when ground. Owing to the presence of weed seeds it is better to be always ground before feeding.

POULTRY DISEASE INVESTIGATIONS.

During the year, Dr. A. B. Wickware, Pathologist in charge of Poultry Diseases, has conducted investigations in a number of poultry diseases, and has been of great help in the work.

EXTENSION.

The survey work conducted in Quebec is still proving a valuable department of extension work. Another department of this work has been started in the sending out of copies of a "Farm Egg and Poultry Account" blank. Duplicate copies of these are returned to the office each month, and to each copy a reply is given pointing out how improvements can be made in the management. Valuable data are received by this Division of actual farm conditions and suggestions are offered that will be helpful to the producers.

A WAR TIME INDUSTRY.

In spite of the high price of feed, there is more inquiry for information and for stock and eggs this year than ever. Though the total number of poultry kept may not be increased there is no doubt that the high cost of everything is tending to make producers put their plants on a business basis. The non-producers in the flock are being eliminated, more poultry keepers are keeping accounts, farm poultry plants are being renovated. The back-yard flocks are increasing, and though this year, too, many suburban families started out with immature pullets, those who had suitable birds have found that it is possible to produce eggs at a profit, and that table scraps that might otherwise go to waste can be turned into the very best of human food. In spite of the fact that no special propaganda for greater production of poultry has been conducted, the indications are that there will be an increased production brought about more by increased efficiency than increased numbers.

THE TOBACCO DIVISION.

Despite an unfavourable season, the tobacco crop of 1917 was better than that of the preceding year.

In Quebec, considerable damage was caused by floods, storms, and hail. Generally speaking, tobaccos did not ripen well, the excessive rainfall prolonging the growing period unduly. The weather, moreover, was not hot enough to permit of normal

SESSIONAL PAPER No. 15

ripening and a larger proportion than usual of thin leaves was obtained, thus lessening the weight of the crop. On the other hand, the percentage of leaves suitable for use as cigar binders was markedly increased.

In Ontario the production of flue-cured tobaccos is rapidly increasing. The quality and colour of these were better than in 1916. This was also true of the White Burleys. They ripened better than in the previous year, the harvest dried better and the colour was clearer.

The shortage of tobaccos resulted in a considerable rise in prices. Binder tobaccos in Quebec sold at about 30 cents a pound. White Burleys in Ontario commanded over 20 cents while the flue-cured tobaccos ran from 30 to 40 cents a pound.

The market for Canadian-grown tobaccos was very active, many manufacturers either trying them for the first time or greatly increasing their use.

At the Harrow Tobacco Station conditions permitted of more accurate experimental work in 1917. The value of fall ploughing was demonstrated, both as to economizing labour and also in increasing crop returns and destroying the grey worm.

The use of arsenate of lead at transplanting time was shown to give better results than did Paris green.

The experiments with commercial fertilizers have given results definite enough to permit of the preparation of a formula for these.

The use of Canadian-grown seed is proving more and more to be recommended. The resulting crop is heavier and more uniform and earlier-maturing. About 51 pounds of tobacco seed was produced at Harrow last year.

On the Farnham, Que., Station the Zimmer Spanish, Big Ohio, X Sumatra, and the Yamaska were the varieties grown. The first gave almost an average crop; the other two were in great part destroyed by floods and hail.

A study of the temperatures in the hot-beds shows that the best results are obtained where the temperature in the lower part of the bed is the highest. The cold frames, even under glass, are being regarded with increasing disfavour.

The crop of Zimmer Spanish on the Tobacco Station at St. Jacques l'Achigan, Que., was an average one, fairly well matured but the leaves were very thin and would class as "wrappers" rather than "binders" although the latter had been the class aimed at in growing this variety.

The average loss from plant diseases was about the same as in 1916. There was more damage from mosaic disease but less from tobacco root rot.

The study of the changes occurring in acclimatized varieties was continued at Ottawa and Harrow.

Satisfactory results in producing tobacco suitable for cigar binders, were obtained with a longleaved variety of Obourg and also with Zimmer Spanish. A suitable method of treating this class of tobacco was worked out. It was shown that the Yamaska and Canadian Aurora, may be used as cigar "binders."

During the summer an improved curing barn was built at Farnham, the chief modification made being in the system of ventilation.

DIVISION OF ILLUSTRATION STATIONS.

The third year of the Illustration Station work has shown the value of crop rotations and good cultural methods.

In Saskatchewan and Alberta, during the dry spell in 1917, crops on the Illustration Stations withstood the drought better and gave higher yields than did the average crops in the district in which the stations are located.

The following rotations are being carried on in Alberta and Saskatchewan: -

Wheat continuously.

Wheat, summer-fallow alternately.

Summer-fallow, wheat, oats.

Corn, wheat alternately.

Western rye grass and alfalfa.

Wheat grown continuously has shown a decrease of 10 bushels per acre, and an increase of weed growth.

Wheat after summer-fallow yielded 10 bushels per acre more than wheat grown continuously and the fields are kept free from weeds and in a good state of cultivation.

Wheat on the three-year rotation gave a yield of 4 bushels per acre more than the average of the district. Oats on this rotation did not yield as high as those grown on fallowed land.

Wheat after corn was grown to see if corn could be profitably grown and how much summer-fallow could be eliminated.

Wheat after corn has yielded from 2 to 4 bushels less than after the summer-fallow.

Corn growing in some cases has been successful while in others the frost comes too early, before the plants are fully grown.

Western rye grass and alfalfa have given good results as fodder crops and several operators are making a success of growing seed. Western rye grass has yielded as high as 800 pounds per acre and alfalfa 125 pounds per acre.

Farmers are taking the opportunity to purchase this seed at a reasonable price from the operators of the Illustration Stations, and no difficulty is found in getting sale for all that is grown.

Wheat and oats are also grown for seed purposes. Farmers operating the stations are allowed to reserve a certain quantity for their own seeding, the balance of the seed being sold to farmers of the neighbourhood.

VISITS.

During the season each Illustration Station was visited at least once each month by the inspector in charge of the work in the province, and at least once during the season by the supervisor.

The object of these visits is to instruct the operators as to the best methods of cultivation and to give advice on general farm work.

Farms in the vicinity of the stations are also visited and general farm problems are discussed.

SESSIONAL PAPER No. 15

MEETINGS.

During the year meetings were held on the illustration fields. Farmers and others interested in farm work were notified and much interest was shown by them in examining the crops and having the methods of cultivation explained to them. Meetings were also held during the winter at many places where the stations are located.

In addition to the illustration work with crops, the operators were supplied with settings of eggs from the Experimental Farms and with garden seeds. Much interest was shown in both these lines of work by the farmers in the districts of the stations and many of them have now pure-bred flocks and better gardens.

DIVISION OF ECONOMIC FIBRE PRODUCTION.

Experimental plots have been grown in the various districts in Canada with a view to determine the areas that are suitable for the production of flax fibre. The crop from these plots have been shipped to Ottawa and retted and scutched in the fully equipped flax mill at the Central Farm. Fibre of first-class quality has been obtained from the western part of British Columbia, southwestern Ontario, the valley of the St. Lawrence, and the Maritime Provinces. An exhibit of flax fibre and products prepared by the Experimental Farm won a gold medal at the Toronto Exhibition last year.

Special attention has been given to the production of a practical flax harvester, and it is hoped that such a machine will be on the market this season. The prairie flax straw piles may possibly become a valuable asset as a serviceable straw board can be made from the flax straw now going to waste. A sort of straw lumber can also be produced suitable for walls and partitions in houses at about \$6 a ton. Investigations into the making of linen are in progress, but have not yet advanced far enough to give much encouragement. In the way of paper making, however, it is said to be a great future for flax straw, and the experiments will continue till definite results have been secured.

DIVISION OF EXTENSION AND PUBLICITY.

The work of the division embraces the—

1. Preparation and staging of exhibits of the Experimental Farms at fairs, exhibitions, winter fairs, poultry shows, and seed fairs.
2. Enlarging the mailing list of publications issued by the Department of Agriculture.
3. The distribution of exhibition circulars.

No exhibition work was done by the Brandon Farm last season owing to the loss by fire of all exhibition material.

The exhibit from the branch farms attended 117 fairs and exhibitions during the year and exhibits from the Central Farm were sent to twenty-nine.

9 GEORGE V, A. 1919

New exhibits and models were furnished to all the branch farms, except Brandon, and were built in five different designs; these will be moved on from one Experimental Farm to another after being used once at each fair in the district.

Every effort is being made to give the exhibition work of the division a greater educational value to the farmer, and at the same time bring to the attention of the public generally the work being undertaken and carried out by the Experimental Farms.

The mailing list has been increased by the addition of 15,709 names, of this 13,739 were English and 1,970 French.

HEALTH OF ANIMALS BRANCH.

This very important branch is maintained for the purpose of safeguarding our live-stock interests, as well as our export trade in meat and canned food products.

Although the conservation of these interests is always a matter of importance, it is now, owing to war conditions a vital question and an imperative duty.

Provision is made under the Animal Contagious Diseases Act for the enforcement of suitable measures to guard against the introduction of diseases from outside sources, and also to control and eradicate certain dangerous contagious diseases within our boundaries by compulsory slaughter methods with compensation.

In order to adequately prevent the importation of diseased stock, shipments of animals are only permitted to enter this country at certain recognized inspection ports and quarantine stations, which are suitably located at points along the International Boundary, and the Atlantic and Pacific seaboards. Veterinary inspectors are stationed at, or in close proximity to these points, for the sole purpose of inspecting all shipments of stock presented for entry. It is their duty to take whatever measures they consider necessary to satisfy themselves that the animals are free from contagious disease before permitting entry. As a further safeguard the Regulations require that American shipments are accompanied by certificates signed by veterinary officers of the Federal Bureau of Animal Industry, stating that the district from which these animals originate is free from certain dangerous contagious and infectious diseases.

In this connection I may say that the hearty co-operation of the American authorities is of very material assistance in the enforcement of our regulations governing the importation of animals from that country. The certificates of their officers are always reliable, and they are ever ready to notify my officers in case a diseased animal is suspected to have been shipped to a point in this country.

Overseas importations, with the exception of horses, are not permitted unless the importer first obtains a permit from my office. They must also be accompanied by certificates signed by an officer of the Board of Agriculture and Fisheries, certifying that no serious contagious disease of animals has existed in the district from which they originated. Upon arrival at the Canadian seaboard, the animals are carefully inspected, and if no evidence of disease is found cattle, sheep and swine are admitted into the quarantine station, where they are detained for further observation, before being permitted to come in contact with Canadian stock. The cattle are held for thirty days, counting from their entry into quarantine, and tested with tuberculin. The sheep and swine are held for thirty days, counting from the date of the sailing

SESSIONAL PAPER No. 15

of the vessel from the port of embarkation. The horse importations are carefully inspected, and if no evidence of disease is found they are allowed to proceed to destination. These shipments consist almost entirely of valuable pure-bred animals, and as they are seldom exposed to infection, it has not so far been considered necessary to detain them, or submit them to a mallein test.

The control of disease within our boundaries is carried out by means of an organized field staff, consisting of a chief veterinary inspector for each western province, with a head office and clerical staff. The work in each province is directed by this officer under the supervision of the Veterinary Director General, at Ottawa, who also directs this work in the east.

There has very fortunately been no extensive outbreak of disease during the past fiscal period. The outbreaks which have occurred have been dealt with expeditiously, and with the least possible loss not only to the owners, but also to my department. The field staff has, however, been working under strength, owing to the fact that twenty-one of its members are on active service.

As the danger of the introduction of diseases foreign to this country will be very real after peace is declared and our fighting forces return, it is a matter of vital importance to maintain the field division at the utmost efficiency, in order that any epizootic may be promptly controlled and eradicated.

The statistics for the period under consideration are fully outlined in the report of the Veterinary Director General, and it is, therefore, only necessary for me to deal with the work of this branch in a general way.

GLANDERS.

The eradication of glanders is still giving my officers considerable trouble in the province of Saskatchewan. This disease has existed for many years in this province and at one time was a very serious menace to the horse industry. There has not been an increase in the number of horses slaughtered in Saskatchewan during this fiscal period, but the fact that practically the same number has been destroyed as in the previous year would indicate that the infection still exists to a dangerous extent. As, however, the outbreaks have been more or less limited, it should be possible to eradicate this disease in the near future.

The situation appears to have improved considerably in Alberta, as the number of cases found in that province during this period has materially decreased.

This serious disease of horses has fortunately not been detected in any of the other provinces, with the exception of Quebec, in which province a small outbreak occurred but was promptly eradicated.

The mallein used for the detection of this disease is all manufactured at the biological laboratory here, and the same precautionary measures have been taken with regard to horses imported from other countries. Those coming from the United States, if accompanied by a satisfactory mallein test chart, signed or endorsed by a Bureau officer, are held at the boundary port and submitted to the mallein test there by a veterinary inspector of the Health of Animals Branch. Reacting horses are either destroyed without compensation or returned to the United States, and the American authorities notified.

9 GEORGE V, A. 1919

DOURINE.

Considerable progress has been made in dealing with this disease in Saskatchewan and Alberta, these being practically the only two provinces in which it has been dealt with. The few cases which have been found during the past year have all occurred in old infected centres. In view, however, of the deceptive nature of this disease, it is still necessary to exercise great caution before removing any quarantine measures from infected premises.

Owing to certain researches, which were conducted by one of the pathologists at the Lethbridge Quarantine Station, it has been possible in recent years to arrive at a definite decision as to whether or not an animal is actually affected with this disease, even though it may appear to be in perfect health. This means of diagnosis has enabled the department to deal very successfully with this disease, and will no doubt enable it to eradicate dourine in this country in the very near future. The disease has, however, been practically eradicated in Saskatchewan, as there was only one case slaughtered in that province during the period in question, although a very large number of serum tests were made.

It has been the custom of my officers to make systematic collections of blood from all breeding stock in the old infected centres, as well as in the territory surrounding these centres. While this entails a great deal of work, it is nevertheless a very necessary procedure. A few cases which were detected by this means, if unobserved, would have been the means of causing a very serious outbreak, resulting in very serious losses to our horse-breeding industry.

HOG CHOLERA

British Columbia is the only province in which hog cholera has not been detected during the fiscal period just past. There were, however, only a very few outbreaks in the provinces of Manitoba, Saskatchewan, and New Brunswick. The disease has, as in the past, been more prevalent in Ontario, but the outbreaks have not been nearly as numerous as those dealt with last year. In the province of Quebec, also, fewer outbreaks have occurred.

The increased activity in the shipment of hogs from all parts of Alberta to the large packing-houses in this country, has resulted in a dissemination of the disease in that province. A number of outbreaks were dealt with in some of the large stock yards, and these were eradicated without any serious further extension of the disease.

There has always been a tendency for outbreaks of this kind to occur whenever large shipments of hogs are brought together from outlying districts. This is no doubt due to the fact that immune carriers of the disease come in contact with susceptible hogs from entirely different districts, resulting in the latter becoming infected.

The compulsory slaughter and compensation policy is still followed in controlling this highly infectious disease of hogs. During the last few years, however, the department has used serum as a protective measure, and although the manufacture, importation, sale or use of hog cholera virus and serum is prohibited under the Quarantine regulations, the department has found it advisable to import a limited

SESSIONAL PAPER No. 15

quantity of the virus and a much larger quantity of the serum, the former for experimental purposes and the latter for economic reasons.

The hog cholera virus, containing, as it does, the active organisms of the disease, must be handled with the greatest of care. The virus is at present being used only on one premises in this country. These premises are under quarantine and the immunization of the hogs is carried on under strict official supervision. No hogs are allowed to be removed from these premises until a special license has been issued by one of my officers. Although this experiment has been going on for a few years, no outbreak of disease has occurred from this source. Although this procedure may be satisfactory in isolated instances, it is not at all likely that it would be practicable or safe if used in a general way in this country. The hog cholera serum does not contain the causative agent of the disease, but produces an immunity for a temporary period, when inoculated into susceptible hogs, and is, therefore, valuable for the protection of exposed hogs during a dangerous period.

Approximately 290,000 c.c. of this serum have been used by my officers in protecting 8,000 exposed hogs during the past year.

The Veterinary Director General is of the opinion that the use of serum has saved for food purposes a large number of carcasses of hogs, which under other conditions would have been destroyed. It would also appear that the use of serum with exposed hogs has resulted in a decrease in the number of premises on which the disease has actually been found. In view of the fact, however, that the serum gives only temporary immunity it has been our policy to have all treated exposed hogs prepared for the block as soon as possible and disposed of in this way.

Practically all of the outbreaks of hog cholera during the period in question have been traced to the feeding of garbage, and in view of the danger of infection from this source, it has been necessary to control as far as practicable the feeding of this material. The regulations now require that persons feeding garbage to hogs on premises other than those on which it is produced, obtain a special license from the Veterinary Director General, and a penalty is provided for those who fail to comply with this requirement.

The statistics in the report of the Veterinary Director General show that practically one-half of the outbreaks of hog cholera during the period in question were dealt with in Ontario, and there is no doubt that the principal source of infection in this province comes from American pork scraps fed to hogs in the garbage, as American pork products are consumed by our people to a much larger extent in Ontario than in any other province in Canada.

In view of the importance of increasing our hog production to the greatest possible extent, it is imperative that adequate measures are taken to prevent the serious losses sustained from outbreaks of this disease. The outbreaks of this disease which do occur throughout this country are regularly and systematically eradicated, and it would, therefore, appear that the Department would not, in view of these conditions, be justified in using the simultaneous method for immunization, as this would entail the introduction of the virus into many thousand hogs, and would establish a permanent infection throughout this country.

9 GEORGE V, A. 1919

ANTHRAX.

This very serious fatal malady of man and all domestic animals has fortunately been detected on only four premises throughout Canada during the fiscal period under consideration. The disease was in each case found on old-infected premises in the provinces of Ontario and Quebec. Prompt measures were taken for the immunization of all contact stock on the infected premises, as well as on adjoining farms, with the result that an extension of these outbreaks did not occur.

Anthrax vaccine is manufactured at the biological laboratory here and is supplied to veterinarians at cost price, but this vaccine is not sent out in a new outbreak until the veterinary inspector's diagnosis has been confirmed by microscopic examination of the blood.

RABIES.

No serious outbreak of this disease has been dealt with for some years in Canada. This is a very important disease when looked upon from a public health standpoint, owing to the fact that the malady is easily transmitted to the human being through the bites of rabid animals.

The policy followed in dealing with this disease is to quarantine premises on which suspected cases have occurred. All dogs on these premises are securely chained or muzzled, and any other bitten animals are securely detained. These restrictions are enforced until a satisfactory period has expired to satisfy the department that infection has been destroyed.

Although there were a large number of animals examined on suspicion in Ontario, the department was only able to confirm the diagnosis of rabies in a very few cases.

MANGE IN CATTLE AND HORSES.

There has been a marked improvement with regard to this disease during the fiscal year just past.

Mange in horses has not for many years existed to a serious extent in this country, and it is very gratifying to state that in the twelve months just ended my officers have only found thirty-one horses actually infected with this malady throughout Canada. Most of these cases were dealt with in Saskatchewan, and there is no doubt a number of them were due to infection brought in from the south.

It is not always possible, even with the most careful examination, to detect an animal harbouring the mange mite, but not showing any symptoms of skin trouble. The large number of settler's horses and others imported for commercial purposes coming into the western provinces make this source of infection a most real one, and although all possible measures are taken to prohibit the importation of affected animals, some undetected cases are possibly imported.

Although the mange parasite of cattle is more easily destroyed than the one producing mange in the horse, the department has for many years experienced a great deal of difficulty in controlling this disease in cattle on the western ranges. This is no doubt due to the fact that the infection of mange exists on the open range.

Although many years ago the control of this disease caused the department a great deal of anxiety and trouble, the situation has during the last few years improved very

SESSIONAL PAPER No. 15

materially. The large area covered by special restrictions, controlling and limiting the movement of all cattle in and out of that area, has been gradually reduced. It has, however, not been possible to remove any of the restrictions from any part of this area during the past year. There is no doubt, however, that if the same progress is made in the future, the department will soon be justified in releasing portions of this area from the restrictions which cause so much inconvenience, and in many instances serious annoyance to the shipper. In view, however, of the necessity of controlling this disease it is necessary to exercise caution.

The infected area is carefully ridden by experienced range riders and all herds carefully inspected in a systematic manner. Any herds, in which the disease is found or suspected, are specially quarantined and treated under official supervision, and all possible measures are taken to prevent the movement of any infected or exposed stock to points outside this area, or to points in the area where the infection has been eradicated.

It has been possible for our officers to keep in closer touch with the existing conditions, owing to the fact that the infected area is much smaller than in former years. It is, therefore, gratifying to be able to report that with a closer supervision over all herds in this area, my officers were only able to find half the number of cases reported in the previous year, when they had a larger territory to cover. This would indicate that if energetic measures are followed in the infected territory, there is every possibility of eradicating this disease in the near future.

SHEEP SCAB.

This disease has been practically eradicated in this country. There were only five cases of sheep scab dealt with in Canada during the past year and these cases were all found in an outlying district in Manitoba, where an outbreak had been dealt with a few years ago.

In view of the troublesome nature of this malady it is necessary to enforce regulations for the purpose of preventing the possibility of the importation of infected animals. Owing to the desirability of encouraging the importation of large flocks of sheep for our western provinces, where we have good grazing areas for these animals, it was considered advisable to amend the Sheep Order so as to permit the importation of sheep from the states of Washington, North Dakota, Montana, Idaho, and Wyoming, without dipping or quarantine at the international boundary.

In order, however, to safeguard our interests, importation from the above-mentioned states must be accompanied by a certificate signed by an officer of the Bureau of Animal Industry, stating that the sheep have been inspected within the thirty days prior to their arrival at the international boundary, and that they have been found to be free from scab and necrobacillosis, and that these diseases do not exist in the county or counties in which the sheep originated.

Shipments accompanied by this certificate are carefully inspected by the Canadian veterinary officer and if no signs of disease are detected are permitted to proceed to destination.

BOVINE TUBERCULOSIS.

The control of this disease has been a question of serious consideration by all authoritative bodies for many years and although it exists in all civilized countries to an alarming extent, the nature of the disease and the tremendous economic losses which would result from compulsory measures, have prevented the taking of any drastic measures.

The question is a very serious one and attended by very many difficulties. These are of such a nature that even in normal times authorities have hesitated to enforce measures which are considered suitable for its proper control. The fact will, therefore, be appreciated that under war conditions extreme caution must be exercised in dealing with a matter of this kind.

While the department is only too anxious to be of assistance in every possible way in the suppression of this disease, the necessity of utilizing every possible form of food which can be rendered wholesome, makes it imperative to even exercise caution in promulgating measures for the control of dangerous infectious diseases in food-producing animals. No changes have been made in the policy which has recently been followed in dealing with this disease.

Compulsory slaughter of affected animals is only followed in connection with municipal licensed dairy herds under the Tuberculosis Order. This order has been in force nearly four years, and up to the present time the only cities in Canada which have taken advantage of this order are Saskatoon, Regina, North Battleford, and Ottawa.

During the past year there have been approximately 7,000 cattle tested in the dairies supplying milk to these cities, and approximately 4½ per cent of these animals were found to be tuberculous. The department paid approximately \$9,000 in compensation, and the owners realized in addition to the compensation approximately \$5,000 for the carcasses which were passed as fit for food. Out of three hundred and three reactors, twenty-eight carcasses were condemned, for which the owners received the amount of compensation awarded by the department and in addition thereto the amount realized from the sale of the hides and the value of the carcasses as an inedible product. It is, therefore, quite evident that if municipalities would take advantage of the assistance offered by this department under the Tuberculosis Order, good progress could be made in controlling tuberculosis in dairy herds with the least possible loss to all concerned.

FOXES.

The order necessitating the inspection and quarantining of all foxes imported to Prince Edward Island is still being carefully enforced and has doubtless resulted in the desired protection from communicable diseases among foxes on the island.

The imported animals are quarantined for thirty days on the site provided by the provincial authorities, where they are examined carefully and kept under the supervision of the veterinary officer. Twenty-five imported foxes were quarantined during the last fiscal period but no disease was detected.

SESSIONAL PAPER No. 15

INSPECTION OF CARS AND YARDS.

In view of the necessity of maintaining a close supervision over stock cars and yards for the purpose of enforcing systematic and effective disinfection of all premises through which live stock pass during their transportation from one part of this country to another, an adequate force of inspectors is maintained at suitable points.

LABORATORIES.

There are three laboratories maintained by this department. The biological laboratory is located at the Central Experimental Farm, Ottawa. At this laboratory, anthrax and blackleg vaccines are manufactured for distribution at cost. The mallein used in testing horses for glanders, and the tuberculin for testing cattle for tuberculosis are also manufactured here. There are also many thousand specimens examined microscopically for diagnostic purposes, as well as many specimens for confirmation of diagnoses made by inspectors in the abattoirs working under the provisions of the Meat and Canned Foods Act.

One of the pathologists at this laboratory has been devoting a great deal of his time to conducting research experiments in connection with contagious abortion, and another is giving his attention to researches in connection with diseases of poultry.

A research laboratory is maintained at Lethbridge, and another one at Agassiz. The work in the laboratory at the former point is limited largely to the examination of serum for the diagnosis of dourine, while the pathologist stationed at Agassiz is engaged chiefly in investigating the life-history of certain parasites and the investigation of plant poisoning of animals peculiar to British Columbia. The veterinarians at these two laboratories have also examined microscopically specimens forwarded to them for diagnostic purposes by stock owners, as well as those sent by the Meat Inspectors.

The work in these laboratories varies from time to time, as it is necessary to devote special attention to ascertaining certain facts with regard to any disease which may occur, and cause serious fatalities among live stock. The maintenance of laboratories of this kind is very essential to the efficiency of the work in the field.

QUARANTINES.

The same policy is still followed in dealing with overseas importations. Intending importers must first obtain a permit for the importation of any live stock. All animals with the exception of horses are quarantined at the port of landing. On the Atlantic seaboard, three quarantine stations are maintained, one at Quebec, another at Halifax, and the other at St. John. A veterinary superintendent is employed at each of these stations with whatever lay assistance is necessary. Adequate accommodation for stock is provided and everything possible is done to not only keep the separate importations isolated while undergoing detention, but to provide suitable exercising grounds for each particular shipment.

9 GEORGE V, A. 1919

The importations from Great Britain have naturally decreased since the commencement of the war, but there were, during the past fiscal period, 613 cattle, 796 sheep, and 5 goats actually imported.

MEAT AND CANNED FOODS DIVISION.

The details in connection with the scope and the carrying on of the work under the Meat and Canned Foods Act have been described at different times during the past. It is therefore unnecessary for me at present to offer any further comment.

Its objects are to ensure a sound, safe, wholesome meat food supply for our foreign customers and for those who purchase meats from establishments operating under the Act. Some criticism has been made that the Act does not go far enough inasmuch as it does not provide for municipal or local inspection. In answer to this I wish to quote from a leaflet issued some time ago, entitled "The Canadian Meat Inspection Service" :—

"Before the Meat and Canned Foods Act was introduced in the House of Commons, by the Honourable Sydney Fisher, the Minister of Justice was asked for an opinion as to the powers of the Federal Government with reference to meat inspection.

"His reply was that while these powers undoubtedly warranted the Federal Government in undertaking the inspection of articles exported from the Dominion or from one province to another, there was very grave doubt as to whether they would permit of a similar inspection of articles the trade in which was confined within the boundaries of any one province.

"This limitation was especially applicable to meat inspection, a subject intimately associated with public health, one of the matters which, since 1872, has been dealt with altogether by the provincial authorities.

"Provision is made either by the Municipal Act or by the Public Health Act of each province, and in some cases by both, for the establishment and carrying on of municipal meat inspection, and that this legislation has, up till now, in too many cases, remained a dead letter, or, at best, been very ineffectively enforced, is no fault of the Federal authorities.

"Further, a little consideration will, I think, demonstrate the utter impossibility of any Federal department undertaking the supervision, in all its ramifications, of the local meat trade, in every town and village throughout the Dominion.

"On the other hand, under the provincial laws above mentioned, it is quite possible for municipalities to organize at but little cost a thoroughly effective system of local meat inspection, the machinery being, in many cases, already provided, and the additional expenditure, therefore, comparatively small.

"I am satisfied that once the Canadian public has become seized of the situation, they will insist upon the adoption, by the various municipal authorities throughout the country, of a much more thorough system of dealing with butchers and the meat trade generally than has hitherto been tolerated.

"It does not appear to me that there is any need for or likelihood of conflict.

SESSIONAL PAPER No. 15

"We are setting a fairly high standard, and all that is required is for the municipalities to adopt, under the legislation now existing, regulations somewhat similar to ours, with the view of rendering unmarketable, diseased or otherwise unsound meats, which, under present conditions, cannot enter establishments engaged in export or interprovincial trade.

"The first and most important step in this direction will, it is needless to say, be the providing of public municipal abattoirs, to be conducted under inspection methods similar to those required by the Meat and Canned Foods Act, especially as regards the admission either of live animals or their carcasses.

"The sooner the private slaughter house is abolished altogether, the better for all concerned, as most of the objectionable meats placed on the market emanate from these undesirable and unsanitary places.

"The trade in home-killed dressed carcasses will also, for similar reasons, gradually be wiped out of existence, and although the abolition of this form of meat disposal will probably cause some temporary dissatisfaction among farmers, matters will soon adjust themselves and the profits to the producer will be in no way lessened, although the livers and other offal hitherto utilized by the household will be no longer available.

"The municipal abattoir is a modern necessity and must come."

Wonderful progress has been made during the ten and a half years of operation of the Meat and Canned Foods Act. Our methods of inspection have improved and have kept pace with modern ideas and practices. The improvement in the sanitary construction, equipment and methods employed in inspected establishments has been all that could be hoped for. It is no idle boast, nor any exaggeration, to say that our system and service is at the present time second to none.

To the managements of the various establishments under inspection I wish to express my appreciation of their co-operation. We have not always been able to see conditions in the same light, yet all differences of opinion have been adjusted in an amicable and satisfactory manner.

The officers of this Division have been faithful in the performance of their duties. Owing to the number of qualified technical inspectors who were permitted to go overseas, and of those who, when refused permission to do so, tendered their resignation, the work became very heavy for those who remained on duty. They, however, met the situation as best they could with little complaint.

In view of the increasing cost of living, it was decided to raise the minimum salary paid to our technical officers. Needless to say, this has been very much appreciated.

During the year the Canada Food Board decided that it would be in the public interest to permit the use of oleomargarine. The administration of the Order in Council and regulations governing the trade was handed over to this branch in so far as the manufacture and importation of the product was concerned, its retail sale being closely watched by officials of the Dairy and Cold Storage Commissioner's Branch.

9 GEORGE V, A. 1919

FRUIT AND VEGETABLES.

Owing to the unfavourable season the pack was light, consequently the prices were much higher than usual.

The sanitary conditions in the canning establishments were well maintained; many improvements and alterations were made in a number of the plants. Owing however, to the scarcity of skilled artisans and the very high price of all kinds of building material we were not able to have all the improvements which we would wish made to some of the smaller plants.

The apple evaporators, owing to the scarcity of apples, had little to do. Many did not operate, and those that did worked only for a very short time. The enforcement of the standard regarding moisture-content has resulted in a remarkable improvement in the finished product, so much so that it can now be said that Canadian evaporated apples stand second to none.

A very large amount of vegetables has been dried for the use of the Allied Armies. This trade is somewhat new to Canada but it has now been proved that it is both a practical and a profitable method whereby the surplus of many varieties of vegetables can be taken care of and held over for use during the seasons when such valuable foods are scarce.

The establishments preparing condensed and evaporated milk and milk powders were never so busy. The enormous demand for these products has taxed to the uttermost the plants engaged in their manufacture. These places are, almost without exception, models of sanitation, and require little comment.

FRUIT BRANCH.

THE FRUIT SEASON.

The apple season of 1917 was even poorer than the previous year. Spring was exceptionally late and cold, and was followed by heavy rainfalls, making thorough spraying difficult and inducing a rapid development of apple scab. There was a very heavy June drop of apples in British Columbia which caused earlier prospects to fall down to some extent. These conditions were succeeded by very hot dry weather in all districts during July and August, particularly serious in the irrigated sections of British Columbia where a scarcity of water was greatly felt.

The British embargo on apples deprived Nova Scotia of its usual export market and it was doubtful, early in the season, whether there would be sufficient demand in Canada to consume the entire output of the Annapolis valley. Owing to the very light apple crop in Ontario and Quebec, however, it became necessary for the large consuming markets in the eastern provinces as well as in the prairies, to obtain their supply from Nova Scotia and British Columbia. It was therefore possible for practically the entire apple crop to be moved westward. By the end of March, 1918, there were very few apples still remaining in the hands of growers and shippers.

The successful marketing of the Canadian apple crop of 1917 was unquestionably due to the poor yield in Ontario and Quebec. Should there be an average crop in all

SESSIONAL PAPER No. 15

the apple-producing provinces in 1918, special efforts will probably have to be made to move the available fruit into profitable channels of consumption.

The crop of tender fruits in the Niagara Peninsula and in other parts of the Dominion was only medium.

FRUIT CROP REPORTS.

Fruit crop reports were published each month from June to September, inclusive. Telegraphic reports were issued twice weekly from August till February. As the season advanced these reports fully outlined the prospects in Canada and the United States and also reported current prices in the leading Canadian markets.

PRICES.

Prices for all fruits were exceptionally high. Small fruits and tomatoes were always in demand. The demand for peaches, pears, plums, and cherries, owing to the increased quantities used for canning, also continued strong and at prices seldom realized by the grower.

The apple situation was peculiar. On account of the extremely short crop in Ontario and Quebec, the trade quite early turned their attention to British Columbia and Nova Scotia for their supplies. A large proportion of the crop in British Columbia was disposed of early in the season at prices which, at that time, were considered maximum prices under existing conditions; but these advanced steadily for some weeks following the opening of the shipping season. In Nova Scotia the growers early in the season were feeling much concerned as to the prices they would receive. This condition, however, was entirely changed after the unprecedented number of enquiries for quotations and the many offers to purchase supplies. The f.o.b. prices for winter varieties advanced in many cases from 25 to 75 per cent during September. The demand for Ontario apples was very keen, and record prices were paid for winter stock. Fameuse, McIntosh Red, and other popular varieties grown in Quebec met with ready sale and in many cases the prices were higher than those paid in 1916.

In the early months of 1918 many dealers who had been holding stock all winter were forced to sell at lower prices than those at which the fruit was bought, in order to move it into consumption without waste.

So far as the growers' prices are concerned, the season of 1917 may be considered remarkably successful.

CONVENTION OF FRUIT GROWERS.

As a result of frequent requests from all parts of the Dominion, a convention of representative growers was held in Ottawa on March 26 and 27. The main objects of the conference were: (1) to effect greater standardization of fruit packages; (2) to make certain amendments to the Inspection and Sale Act, Part IX; and (3) to give to the Dominion Fruit Inspectors more administrative power and responsibility in the performance of their duties.

There has been for a number of years a general feeling among fruit shippers that the great variation in the size of fruit packages should be corrected. Several meet-

9 GEORGE V, A. 1919

ings were held in the different provinces at various times in order to discuss the standarization of packages, and definite recommendations were made to this Branch on many occasions. By calling together the various provincial representatives and by passing certain resolutions, many of the former difficulties have been removed. There will now be a uniform apple barrel and apple box for the Dominion as well as standard packages for practically all other fruits.

Resolutions were also passed defining more clearly—and thereby improving—various grades of fruit. It has long been felt that some definition of a No. 3 apple was essential to the industry, not only for the protection of the consumer but also in the interests of growers and distributors. Apples of the very poorest quality have been included in this grade, generally of course by growers who had no desire to create a demand for their pack. The definition of a No. 3 apple is now such that the consumer is assured of a fair grade of fruit which will serve a useful purpose in the household. The definition of the No. 2 grade has also been changed so that its standard of quality will be higher than formerly. A “domestic” grade has been made legal and will include apples practically equal in size and colour to the higher grades but slightly affected with minor blemishes. Legislation has also been recommended to make it compulsory for shippers to properly fill all packages of fruit and also to prohibit the marketing of immature fruit.

TRANSPORTATION.

In compliance with frequent requests of provincial and district Fruit Growers' Associations, also vegetable growers and shippers, the appointment of Mr. G. E. McIntosh as transportation officer to this branch was authorized May 1, 1917.

Mr. McIntosh visited the central shipping districts of each Canadian province, as well as competing western States. Local shipping complaints were investigated in the different provinces and dealt with either directly with the railway and express officials or through the Board of Railway Commissioners.

It has long been conceded that owing to the perishable nature of fruits it was dangerous to the industry to overlook the maintainance of the best possible transportation service. Growers and shippers are kept advised with the most modern methods of loading and every effort is being made to prevent the waste of food or food products by carrying companies.

The work is yet in an organization stage and, owing to the present congested condition of the railways, efforts have been confined largely to straightening the more complex problems arising in connection with the marketing of perishable agricultural products.

Crop conditions were such the past season that transportation difficulties were experienced principally in British Columbia, New Brunswick, Nova Scotia, and Prince Edward Island. The British embargo forced, for the first time, the Nova Scotia apple crop on the Canadian market, thus increasing rail traffic by approximately 2,100 carloads, and necessitating special traffic arrangements. In this particular instance, as well as in the movement of potatoes from New Brunswick and Prince Edward Island, and the fruit crop from British Columbia, valuable service was rendered both producers and consumers.

SESSIONAL PAPER No. 15

Express and freight tariff charges have been arranged in the interests of different shipping districts throughout Canada.

Insufficient team track accommodation at certain fruit and vegetable shipping centres has been the cause of considerable complaint, as well as rough handling in transit. In such cases the complaint has been investigated and representation made to the proper officials, or if necessary, referred to the Board of Railway Commissioners for final adjustment.

Shelters for the protection of express shipments of fruit have been obtained at points in British Columbia and Ontario.

The distribution of fertilizers and the providing of railway equipment for this traffic has received attention. During January, February and March, a somewhat serious situation in regard to greenhouse and cold-frame plant production has been removed by the prompt action of the carriers.

Efforts are being made to develop the soft fruit producing sections of New Brunswick by obtaining special express rates to the more distant markets.

Considerable interest is manifested by fruit and vegetable shippers in the circulars issued during the shipping season, giving traffic and other transportation information.

By having specific information supplied from an authentic source, the different railway and express companies are co-operating in the work and are giving special attention to deliveries of perishables, and also of feeds, seeds, spray material, etc., upon request from this office.

Meetings of growers were attended and addressed at Grimsby, St. Catharines, Toronto, Ont., Ste. Anne de Bellevue, Que., and Kentville, N.S.

The enforcement of Order in Council dated Monday, the 24th day of December, 1917, relating to car detention, and other transportation matters connected with the Canada Food Board, have been entrusted to Mr. McIntosh.

GENERAL.

Special efforts have been made during the past year to settle disputes between shippers and dealers. Difficulties have frequently arisen on account of cars being refused at destination by the consignee and the shipper having to accept low prices on the advice of the receiver. Apparently valid reasons were given but the shipper often had cause to doubt the soundness of these and to believe that the consignee was taking an unfair advantage. Similar difficulties arose on account of delays at shipping point, the non-filling of orders, the unloading of cars, etc. It therefore seemed necessary, in the interests of all concerned, to give assistance by making use of our inspectors as arbitrators. Much valuable work was done in this way.

Part of the work of this office has been closely associated with that of the Canada Food Board. The Commissioner and other members of this Branch assisted in the organization and subsequent operations of the Fruit and Vegetable Committee, which has been in active session since September last. Mr. C. W. Baxter, our Chief Fruit Inspector for Eastern Ontario and Quebec, is now in charge of that work at the office of the Canada Food Board.

9 GEORGE V, A. 1919

In order to keep in close touch with the fruit inspectors and to directly supervise their work, the Commissioner visited the apple producing sections during the marketing season. Owing, however, to the urgent and important nature of this work in Ottawa, he did comparatively little travelling during the year.

INSPECTION WORK.

Inspection at point of shipment, which has now almost entirely superseded the old method of inspection at distributing and marketing centres, continues to prove satisfactory, alike to producer, dealer and consumer. It was of particular value in Nova Scotia this season where, owing to the British embargo, the growers had to seek a market for their crop on this continent, whereas in former years by far the greater proportion of their apples had gone to Great Britain and consequently their trade connections were all with that country. In dealing with new customers, both in Eastern Canada and in the West, the possibility of securing a certificate from one of our inspectors to accompany the bill of lading was the means of satisfactory closing many sales. Owing to the practical famine in apples which existed in Quebec and Ontario, the Nova Scotian growers and shippers found no difficulty in disposing of their crop at remunerative prices. So remunerative, in fact, were the prices offered for apples that everything harvested was packed for sale and shipments were made from sections that had never before attempted to do anything more with their apples than dispose of them locally. Therefore, while the general run of the Nova Scotian pack, particularly from the co-operative associations and the well established shippers, was all that could be desired in the way of grading and packing, a certain number of cars were shipped which were not satisfactory to the purchasers, and show the necessity of continuing the educational work as well as inspection.

The convictions for violation of the Inspection and Sale Act were thirteen, the same as in 1916-17.

Owing to the increasing importance of the small fruit, as well as the apple industry in New Brunswick, and at the earnest request of large numbers of growers there, two additional inspectors were appointed for work in that province.

In Quebec, where the crop was light and of poor quality, our inspectors were able to do valuable work in the orchards and packing houses, where their presence had a tendency to counteract the temptation to place as much fruit as possible in the higher grades, without too much attention being paid to the requirements of the law.

In Ontario, the inspection of small and soft fruits, started in 1915, has been followed up, our temporary inspectors being appointed early enough to inspect the first shipments of strawberries; and I am glad to be able to report that a very marked improvement is noticeable in connection with the two points that were most subject to complaint in the past, the shipping of immature fruit and the overfacing of open packages. There was only one prosecution during the past season for overfacing, that is the placing of fine, large, highly coloured specimens on the top layer of a basket while beneath the fruit is immature, off colour, small and otherwise inferior to the face or shown surface. This is a good record in comparison with 12 convictions in 1916, and 21 in 1915.

SESSIONAL PAPER No. 15

The crop of apples was abnormally light and of unusually poor quality owing to climatic conditions and, in many cases, to failure to properly spray due to lack of labour or the fear that the market would be poor. For this reason the larger proportion of the apples harvested had to be graded No. 3, so that it was only necessary for our inspectors in most cases to see that section 321 (c) had been complied with. For this reason, early in December it was possible to transfer ten of the men who were ordinarily employed on fruit inspection work in Ontario, to work in co-operation with the Canada Food Board in an attempt to move Prince Edward Island potatoes in lined box cars during winter months. Owing to unusually stormy weather, both on the Island and in New Brunswick, which resulted in holding up traffic everywhere, great difficulty was experienced with these shipments, but plans were laid and experience gained this winter that will be of undoubted value in dealing with the crop of next year.

In British Columbia, where an average crop was harvested, the pack was generally of very high quality and, though a few violations were reported and duly investigated by the Chief Inspector, it was not found necessary to prosecute in a single case during the season 1917-18. Any deviation from the law in the matter of grading was usually traced directly back to inexperienced help, which is a problem that has affected all the fruit districts but possibly British Columbia to an even greater extent than any other.

In addition to the inspection of fruit, members of the staff visited the basket factories for the purpose of seeing that the manufacturers were complying with the requirements of section 326. They have also assisted at fruit meetings, exhibitions and packing courses in the different fruit districts of the country.

9 GEORGE V, A. 1919

INSPECTION STATISTICS.

The following table gives comparative statements of the number of lots inspected and the number of packages inspected for the seasons 1913-14 to 1917-18, inclusive:—

Variety.	No. of Lots inspected.	No. of Pkgs. in Lots inspected.	No. of Pkgs. inspected.
1913-14.			
Apples..... Brls.	11,725	799,510	59,643
"..... Boxes.	2,631	341,679	29,879
"..... Bskts.	105	11,908	1,219
Crab Apples..... Boxes.	193	13,250	1,462
Pears..... "	977	48,274	8,559
Peaches..... "	806	35,494	12,657
"..... Bskts.	353	60,771	7,564
Plums..... "	679	132,159	15,200
Tomatoes..... "	173	59,707	7,305
Small fruits..... Quarts.	736	1,128,907	95,841
Total.....			239,329
1914-15.			
Apples..... Brls.	8,926	765,445	59,662
"..... Boxes.	2,769	457,055	36,118
"..... Bskts.	191	29,476	3,994
Crab Apples..... Boxes.	38	2,443	951
Pears..... "	894	91,121	9,760
Peaches..... "	735	183,952	10,035
"..... Bskts.	147	17,797	2,422
Plums..... "	643	180,154	12,294
Tomatoes..... "	305	103,742	12,171
Small fruits..... Quarts.	1,162	1,529,598	151,599
Grapes..... Bskts.	244	308,728	22,394
Total.....			321,300
1915-16.			
Apples..... Brls.	8,882	710,858	60,248
"..... Boxes.	4,297	758,337	46,791
"..... Bskts.	204	14,319	1,797
Pears..... Boxes.	1,062	121,414	8,816
Peaches..... "	1,022	270,508	12,575
"..... Bskts.	838	106,569	10,796
Plums..... "	998	482,416	22,231
Tomatoes..... "	633	200,343	7,926
Small fruits..... Quarts.	1,724	2,670,984	275,234
Grapes..... Bskts.	260	382,332	11,395
Total.....			457,809
1916-17.			
Apples..... Brls.	6,412	404,597	43,359
"..... Boxes.	2,337	679,148	32,420
"..... Bskts.	188	14,472	1,332
Pears..... Boxes.	200	108,426	6,108
Peaches..... "	1,179	289,560	15,612
Plums..... Bskts.	609	158,133	7,215
Tomatoes..... "	624	136,993	5,812
Small fruits..... Pkgs.	2,039	282,365	99,799
Grapes..... Bskts.	193	273,435	7,951
Total.....			219,605
1917-18.			
Apples..... Brls.	5,652	379,496	40,117
"..... Boxes.	3,157	908,892	35,888
"..... Bskts.	196	16,146	1,709
Pears..... Boxes.	779	112,717	4,954
Peaches..... "	1,303	224,228	14,481
Plums..... Bskts.	773	195,084	5,952
Tomatoes..... "	652	158,971	6,383
Small fruits..... Pkgs.	1,312	248,539	14,637
Grapes..... Bskts.	135	153,027	3,415
Total.....			127,536

SESSIONAL PAPER No. 15

ENTOMOLOGICAL BRANCH.

The work of the branch has comprised the conducting of investigations upon insects affecting farm, garden and orchard crops, forest and shade trees, domestic and other animals, household and public health, mills and stored products, and the giving of advice concerning the control of such insects; the administration of the regulations of the Destructive Insect and Pest Act in so far as insects are concerned; the suppression of the brown-tail moth in Nova Scotia and New Brunswick and the introduction of its parasites and predacious insect enemies into eastern Canada; and the administration of an appropriation for the care of the orchards on the Indian reservations in British Columbia.

In addition the officer in charge of this branch has been called upon to advise on questions relating to the protection of birds and mammals and the control of noxious species of animals and on account of the increased demands for assistance along these lines the additional office of Consulting Zoologist has been added to that of Dominion Entomologist, by Order in Council of April 10, 1917.

The investigation of insect pests and their control has been continued at the various entomological field laboratories and at Ottawa. Special efforts have been made to impress upon agriculturists throughout Canada the importance of crop protection as a means of securing increased production. In certain instances the officers at the field laboratories have devoted their time entirely to conducting demonstration work and crop protection extension work among the farmers and growers in their localities. Very great benefits have resulted from this work particularly in the case of potato, vegetable and fruit culture. The value of field laboratories has never been demonstrated so strikingly as it has since the need for increased protection became so urgent and throughout the entire season the officers in charge are inundated with inquiries and requests for assistance.

The following is a brief summary of the various lines of work that have been undertaken during the last year by the officers in charge of these laboratories and under the direction of the Dominion Entomologist:—

Annapolis Royal, N.S.—The control of insects affecting orchard crops including a continuation of experimental tests on the comparative value of different insecticides and their effect upon the trees and forest has been the chief line of investigation and much valuable information has been secured particularly in regard to the use of combined insecticides and fungicides and their effects on foliage. The value of arsenate of lime as an insecticide was again demonstrated. In addition to the maintenance of numerous demonstration orchards, extensive demonstration work was undertaken on potato spraying and increased yields were secured in certain districts as a consequence of this work.

Fredericton, N.B.—The Brown-tail moth control work in the Maritime Provinces is directed from this laboratory, which is also the headquarters for the work of introducing and establishing the parasitic and predacious enemies of the brown-tail moths and gipsy moths. The study of the natural control of the spruce budworms, tent caterpillars, fall web-worms and oyster-shell scale has made satisfactory progress. As a result of this investigation of the causes underlying outbreaks of insects and their

control, it has now become possible for us to attempt the distribution of the natural insect enemies from regions where control is effectual to other regions where such controlling agencies are absent. These studies were extended to Alberta and British Columbia during the past year. In addition crop protection extension work has been conducted in New Brunswick from the laboratory.

Hemmingford, Que.—The work at this laboratory has consisted mainly in demonstrating spraying in the orchards and in potato fields on numerous farms. Investigations on the use of dust insecticides in orchards have been carried out. In the dairying sections the control of the warble fly is being studied.

Vineland Station, Ont.—The officer in charge of this laboratory has continued his investigations on aphids, particularly those affecting fruit crops; in addition he has paid special attention to the control of insects affecting greenhouses and bush fruits and has been responsible for our extension work in the region served by this laboratory.

Strathroy, Ont.—The investigations on white grubs were continued and the work was considerably extended during the year, particularly in the direction of farm surveys. Attention was also given to other insects destroying field crops in western Ontario.

Treesbank, Man.—Insects affecting cereal crops form the chief lines of investigation at this laboratory. The study of the local species of white grubs was practically completed, and much additional information was obtained respecting grass stem maggots. Special attention was devoted to an outbreak of the western wheat-stem sawfly which occurred in certain parts of southern Manitoba and Saskatchewan.

Lethbridge, Alta.—Owing to the absence, on military service overseas, of the officer in charge of this laboratory, it has been necessary to discontinue temporarily the work of this laboratory.

Agassiz, B.C., Vernon, B.C., and Royal Oak, B.C.—At the permanent laboratory at Agassiz and at temporary laboratories at Vernon and Royal Oak a number of investigations were carried on including the control of the codling moth, and the pear thrips; attention was also paid to other pests affecting orchard, field and garden crops.

In co-operation with the Health of Animals Branch, investigations were conducted in Saskatchewan on swamp fever and also on horse bot flies and other blood-sucking insects affecting live stock.

At Ottawa investigations on white grubs were continued and experiments on the control of a number of insects affecting garden and field crops were continued with satisfactory results.

The Regulations under the Destructive Insect and Pest Act were revised and amended by Order in Council on July 17, 1917. On February 11, 1918, an Order in Council was passed amending the quarantine against plants, etc., from the Hawaiian Islands to permit the entry of pineapples and bananas subject to inspection having been made before shipment.

The inspection of nursery stock originating in Europe, Japan, and the New England States which is carried on under the Destructive Insect and Pest Act enabled us to

SESSIONAL PAPER No. 15

intercept a number of foreign insect pests which are carried in such plants; the most important of these pests being the Ermine moth, a serious enemy of orchard and shade trees in Europe which fortunately has not been introduced into Canada.

It has been possible to bring about a still further reduction in the infestation of the brown-tail moths in Nova Scotia and New Brunswick. In Nova Scotia 10,019 winter webs of this insect were collected during the winter 1916-17, as compared with 14,845 collected in 1915-16; and in New Brunswick, where a greater area is infested, 375 winter webs were collected during 1916-17 compared with 395 collected in the previous year. In Nova Scotia the insect is unfortunately spreading eastward and special attention is being devoted to the prevention of spread. The gipsy moth has not yet reached Canadian territory, and every effort is being made to prevent its introduction by artificial channels.

For the present the collection in the New England States of the insect enemies of the brown-tail and gipsy moths has been discontinued in order that attention may be devoted to the work of determining to what extent the parasites already introduced have become established, and a considerable amount of recovery work was undertaken during the year. Six colonies of predaceous beetles were received, however, from Massachusetts and were liberated in New Brunswick and British Columbia.

The investigations on forest insects have been continued along lines similar to those followed in preceding years, but it was necessary, through lack of assistance, to discontinue the work in British Columbia. Special attention has been devoted to the study of the timber borers and their control in eastern Canada and to the causes of extensive mortality among balsam. The studies on insects affecting shade trees made further and satisfactory progress.

The inquiry respecting the injury to stored grain and flour by insects has been continued. Miscellaneous investigations on insects affecting garden crops, greenhouses and household have been carried out.

Owing to the high price of some of the standard insecticides and shortage in certain districts an inquiry into the insecticide situation was undertaken and conferences were held with the manufacturers and chief importers of insecticides in Eastern Canada. To prevent any shortage the principle Canadian manufacturers are increasing their output for the coming season. Further, we have taken steps with a view to securing a better distribution of insecticides.

As Consulting Zoologist, the officer in charge of the branch has been required to devote a considerable portion of his time to questions relating to the consecration of native birds and mammals and the control of noxious species, particularly in his capacity as Secretary of the Advisory Board on Wild Life Protection. During the year that is past the Migratory Birds' Convention Act was passed; this puts into effect the International Convention for the protection of migratory birds in Canada and the United States. From the standpoint of agriculture this is a measure of immense importance as it provides for the absolute protection of all insectivorous birds which are such necessary factors in the control of insect pests.

9 GEORGE V, A. 1919

The following publications have been issued from the Entomological Branch during the year:—

Report of the Dominion Entomologist for the year ending March 31, 1917.

Entomological Bulletin—

No. 14. Canadian Bark-beetles, Part I: New Species, by J. M. Swaine.

Entomological Circulars—

No. 9. Common Garden Insects and their Control. By A. Gibson.

No. 10. Regulations under the Destructive Insect and Pest Act with instructions to Importers and Exporters of trees, plants and other nursery stock. By C. Gordon Hewitt.

Crop Protection Leaflets—

No. 1. Protection of Crops. By C. Gordon Hewitt.

No. 2. Prepare to Protect your Crops next Season. By C. Gordon Hewitt.

No. 3. Cutworms and their Control. By A. Gibson.

No. 4. Root Maggots and their Control. By A. Gibson.

No. 5. Prevent White Grub Injury. By A. Gibson.

No. 6. How to Control Locusts or Grasshoppers. By A. Gibson.

No. 7. Rats and Mice. By C. Gordon Hewitt.

No. 8. Aphids or Plant Lice. By W. A. Ross.

In addition to the above publications the officers of the Branch have contributed papers embodying the more technical results of their work in the *Canadian Entomologist* and other scientific journals. Articles have also been contributed each month to *The Agricultural Gazette of Canada* on subjects to which the officers of the branch have been devoting study.

By the transfer of the entomological collections from the Victoria Memorial Museum, to the offices of the branch, the entire National Collection of Insects has been brought together during the past year and very satisfactory progress has been made in the arrangement of the various orders. We are indebted to those private collectors in Canada who have made donations to the collection during the year.

BRANCH OF THE CANADIAN COMMISSIONER, INTERNATIONAL
INSTITUTE OF AGRICULTURE.

The finances of the institute reached their lowest point in 1913, when the reserve fund amounted to only \$93,200. Since then, the amounts of the contributions to be paid by the adhering governments have been increased. On account of the war, however, some of the governments are behind in their payments. If all arrears had been paid at the end of 1917 the reserve fund would have amounted to \$427,345. The actual cash reserve amounted to \$212,860. As the result of economy in administration the financial situation of the institute is at present much better than before the war.

SESSIONAL PAPER No. 15

This policy of economy has not, however, prevented the addition from time to time of new publications. There was started during the year a new monthly periodical entitled "Documentary Leaflets," comprising materials which, from their irregularity and lack of periodicity, could not be included in the "International Crop Report and Agricultural Statistics." The new bulletin deals chiefly with meats, animal products, fish, and tropical products such as rubber, cocoa, tea, preparation of the soya bean and other arachidæ, nuts, oils, citrus and various other fruits, woods, etc. There was also published a very useful monograph of 83 pages, accompanied by numerous diagrams and charts, entitled: "The Grain Market of Rotterdam," by V. Van Peski, Secretary of the Confederation of Importers of Cereals and of the Grain Exchange, and by D. L. Uyttenboogaart, Secretary of the Grain Elevators.

Sir James Wilson, K.C.S.I., who had been representing Canada as well as the other British Governments as the resident delegate on the permanent committee at the meetings immediately preceding the war, shortly after the death of his son on the field of battle in October, 1917, returned to England, and was temporarily replaced at the winter meetings of the permanent committee by the Hon. William Erskine, M.V.O., Councillor of His Majesty's Embassy at Rome. Mr. Erskine's appointment as temporary delegate was renewed for the permanent committee meetings of 1917-18.

At the winter meetings of 1918 Mr. Louis Dop, vice-president, presented a very interesting sketch of the accomplishments of the institute for the ten years from the time it was placed on a full running basis in 1909. He laid special emphasis on the international agreements which have been brought about, particularly in relation to crop reporting and the protection of birds useful to agriculture, agricultural meteorology, and the diseases of plants. These accomplishments have been referred to in our preceding annual reports, which have also set forth the methods followed for disseminating in Canada the scientific and practical information published by the institute in its three regular monthly publications and in the international Year Books of statistics and of agricultural legislation. Among the subjects which, from the number of important articles involved, assumed the character of an educative campaign throughout the greater part of the 10-year period, either in the "Bulletin on Foreign Agricultural Intelligence" or in the "Agricultural Gazette," may be mentioned a few which apparently have been followed by definite results in Canada. Those of an educative character have covered agricultural co-operation and co-operative credit, together with other agricultural organization and administration, the application of meteorology to agriculture, with special regard to the critical periods of rainfall, protection against frosts, etc.; the protection of birds; farm book-keeping and the basis of farm accounting; dry farming methods; the results of trials of farm tractors and implements; different systems of flax retting; the Rothamsted experiments in England and the plant breeding experiments at Svalof, Sweden; discoveries of new active factors in foods and feeding stuffs, and all new processes such, for instance, as overhead electric discharge and crop production; also questions of agricultural economy connected with the war and with the settlement of returned soldiers. It is very satisfactory to observe that the system of crop reporting and publication advocated for many years by this Branch has recently been adopted almost in its entirety for the Federal and Provincial services.

9 GEORGE V, A. 1919

Among the more important articles communicated by this branch, and published during the year in the International Institute Section of the "Agricultural Gazette," are the following: "A Biological Analysis of Pellagra-Producing Diets"; "The Problem of Agricultural Meteorology"; "Recent Work at Rothamstad on the Partial Sterilization of the Soil"; "New Experiments on Soil Sterilization in France"; "Review of Investigations in Soil Protozoa and Soil Sterilization"; "Overhead Electric Discharge and Crop Production"; "Spray Irrigation"; "Report on Experiments on Humogen"; "A New Physiological Theory of Heredity"; "Economics of the Breeding of Pure Bred Stock"; "Mechanical Milking"; "Dust Explosions and Fires in Grain Separators in the Northwest"; "Comparative Cost of Tractor and Horse Power in the United States"; "Devices for Disabled Farmhands"; "Fuel Alcohol in Australia"; "Industrial Retting of Textile Plants by Microbiological Action"; "Meat Production and Trade in the United States and Other Countries"; "Breadmaking Trials in France by the War Administration"; "A Statistical Enquiry into Co-operative Organizations in the United States"; "Danish Co-operative Societies for the Export of Eggs"; "Federal Banks and Financial Organization in the United States"; "Regulation of the Fruit Business in the United States"; "Agriculture and the War in Great Britain"; "Settlement of Ex-Service Men within the British Empire after the War"; "Settling of Discharged Soldiers on the Land in New Zealand"; "Agricultural Training for Partially Disabled Belgian Soldiers"; "Blind Soldiers and Agriculture"; "Notes on the World's Wheat Situation"; "Wheat Prospects after the War"; "Production, Trade and Consumption of Oats, Barley and Rye"; "World's Wheat Prospects for the Grain Year 1917-18"; "The Wheat Situation Present and Prospective"; "The World's Live Stock and the War."

The Library.—The removal of the library at the beginning of the fiscal year 1917-18 to the rooms in the West Block has provided much needed accommodation for the growing resources of the library. During the year 1,300 bound volumes and 6,677 pamphlets were added. These include 298 from binding and 1,002 from purchase or gift. The most notable donation was that of Mr. J. A. Ruddick, Commissioner of Dairy and Cold Storage, who donated 207 bound volumes, 213 unbound books and pamphlets and a large number of back issues of periodicals which were needed to complete files. There are now in the library 4,748 bound volumes and 33,807 unbound books and pamphlets.

Guided by the "Agricultural Index," we have chosen for subscription most of the periodicals indexed in it and also make an effort to obtain all other material issued by governments, societies, etc., which is included in it. We receive also by exchange agricultural periodicals published by the different countries all over the world.

The catalogue now numbers 183,000 cards (estimated). During 1917-18, 1,147 were issued by the United States Department of Agriculture for publications of their department; 600 were received from the Office of Experiment Stations for Experiment Station publications; 6,162 Library of Congress cards were added to the depositary catalogue of agricultural literature.

Some of the investigations made during the year were as follows: Wheat-breeding; potato desiccation; sugar beets; municipal markets; the rural church; farm

SESSIONAL PAPER No. 15

labour; food subjects; co-operation; agricultural credit; alcohol as a source of power; cost of feeding poultry; food control; fish waste; vacant lot cultivation; seed control in Denmark; mushrooms; marketing of farm products; forest improvement; birds.

The library at the headquarters of the Institute at Rome has been recently reported to have on its shelves 70,000 bound books, unbound publications and pamphlets. There is now in preparation a complete catalogue of its publications, comprising works entered up to December 31, 1917. At the end of the war it is expected the accession of books will be such that it will become one of the great libraries of the world. 2,660 reviews and newspapers are received, examined, and the pertinent materials summarily extracted for publication monthly. It is in this way that the Institute keeps adhering Governments and the public in close touch with the world's agricultural movement, thus constituting a unique observatory of the progress in agriculture whether technical, economic or social.

PUBLICATIONS BRANCH.

The outstanding feature of the work of the Publications Branch during the past fiscal year was the increase in the number of publications sent out to persons on the various mailing lists and in response to requests for bulletins, reports and other pamphlets issued by the several branches of the Department. The increase which exceeds 100 per cent has been confined chiefly to bulletins and pamphlets, the number of reports issued having been materially reduced. The following table shows the character and number of the publications distributed:—

	Mailing Lists.	Requests.
Reports..	25,074	75,166
Bulletins..	1,574,161	86,364
Seasonable Hints..	833,040	8,700
Pamphlets..	747,650	34,200
Circulars..	4,699,716	123,382
Leaflets..	3,100	6,100
Request Cards..	556,000	
The Agricultural Gazette..	70,118	3,946
Total..	8,512,949	337,858

Besides the addressing of envelopes for our own distribution, we addressed, from our newspapers sets of stencils, a large number for the office of the Food Controller and Live Stock Branch and the Dairy Branch of this Department, amounting in all to about 75,000 envelopes.

For upwards of two years this branch has been engaged in reclassifying the mailing lists which contain upwards of 300,000 names. This has been necessary to avoid duplication, when a publication such as "Seasonable Hints," which deals with practically all branches of agriculture, is sent out. During the year the original English lists, taken over by the Publications Branch some years ago, for the provinces of New Brunswick, Manitoba, Saskatchewan, Alberta, and British Columbia have been revised and transferred to the new classification. About 30,000 French names, chiefly from the province of Quebec, have also been revised and transferred. When the reclassification shall have been completed a publication can be sent to all the addresses on these lists, and combinations thereof, without duplication. In a list so large constant revision is necessary. The removal of individuals and the extension of the rural mail delivery service renders this work important and continuous.

9 GEORGE V, A. 1919

During the year this revision has necessitated the changing of 19,700 addresses and cancelling of 45,320 names. With the changing of addresses and the addition of new names 217,500 stencils have been embossed during the twelve month period.

In the editorial division, press notices of all new publications have been prepared and distributed, and The Agricultural Gazette of Canada has been planned, edited, and published from month to month.

III. PATENTS OF INVENTION.

The following tables show the transactions of the Patent Office, Department of Agriculture, from April, 1917, to March 31, 1918:—

Application for patents.....	8,683
Patents and certificates granted—	
Patents.....	7,233
Certificates.....	1,847
Total.....	9,080
Caveats	364
Assignments of Patents	3,425
Notices under section 8.....	554

Receipts.	\$ cts.	Expenditure.	\$ cts.
Cash received	228,278 57	Salaries	89,850 00
Cash refunded.....	4,226 64	Patent Record	32,681 23
			122,531 23
		Receipts over expenditures	101,520 70
Net cash.....	224,051 93		224,051 93

SESSIONAL PAPER No. 15

DETAILED STATEMENT Patent Office Fees for Year 1917-18.

STATEMENT of Fees Received by the Patent Office Branch from April 1, 1917 to March 31, 1918.

1917.	Amount Received.	Notices.	Patents.	Assign- ments.	Certified Copies.	Caveats.	Sun- dries.	Patent Record Subscription.
	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
April.....	19,704 76	145 90	18,124 14	678 95	242 95	225 00	18 00	269 82
May.....	19,971 82	129 10	18,558 36	799 05	225 10	130 00	77 00	53 21
June.....	19,168 46	99 40	17,740 61	880 95	245 75	165 00	17 00	19 75
July....	18,705 12	101 90	17,613 27	566 58	235 87	165 00	18 50	4 00
August..	19,273 70	104 90	18,179 95	650 05	179 30	120 00	26 00	13 50
September.	15,847 86	83 10	14,941 76	488 10	158 45	100 00	56 90	19 55
October.....	20,382 44	100 50	19,180 74	693 00	209 40	130 00	55 50	13 30
November	19,980 44	90 00	18,769 99	751 35	198 50	118 00	32 00	20 60
December.....	15,994 91	81 00	14,954 81	623 10	182 40	105 00	13 00	35 60
1918.								
January	18,401 57	79 00	17,297 27	582 10	238 95	170 05	22 00	12 20
February.....	19,309 85	82 00	18,311 15	503 40	191 30	180 00	16 00	26 00
March.....	21,537 64	77 00	20,091 84	761 85	316 35	196 00	40 00	54 60
	228,278 57	1,173 80	213,763 89	7,978 48	2,624 32	1,804 05	391 90	542 13
Refunds	4,226 64	65 00	3,607 00	113 55	119 49	11 00	308 00	2 60
Net totals.....	221,051 93	1,108 80	210,156 89	7,864 93	504 83	1,793 05	83 90	539 53

The total number of patents granted to Canadian inventors was 973, and were distributed among the provinces of the Dominion as follows:—

Ontario	398
Quebec.....	220
British Columbia.....	83
Manitoba.....	91
Alberta	61
Saskatchewan.....	84
New Brunswick	14
Nova Scotia	18
Prince Edward Island.....	3
Yukon	1

Patents issued to residents of Canada, with the ratio of population to each patent granted:—

Provinces.	Patents.	One to Every.
British Columbia.....	83	4,728
Manitoba	91	5,006
Saskatchewan	84	5,862
Alberta.....	61	6,142
Ontario.....	398	6,339
Yukon	1	8,512
Quebec.....	220	9,105
New Brunswick.....	14	25,134
Nova Scotia	18	27,352
Prince Edward Island.....	3	31,242

9 GEORGE V, A. 1919

Statement of the number of patents issued under this Act, on which the fees are paid for periods of six, twelve, or eighteen years, at the option of the patentee; and of patents on which the certificates of payments of fees were attached after the issue of patents originally granted for periods of six and twelve years:—

Period for which fees were paid on first issue—		
6 years.	.....	7,196
12 "	.....	4
18 "	.....	33
Patents on which Certificates were attached after issue—		
6 years	.....	1,781
12 "	.....	66
Reissues—		
6 years....	.....	10
12 "	.....	1
18 "	.....	0

COMPARATIVE STATEMENT of the transactions of the Patent Office from 1908 to 1918, inclusive.

Years.	Appli- cations for Patents.	Patents and Certificates Granted.			Caveats.	Assign- ments of Patents.	Fees Received.
		Patents.	Cer- tificates.	Total.			
							\$ cts.
1908	7,406	6,774	744	7,518	317	2,900	178,482 49
1909	7,239	6,395	827	7,222	319	3,001	176,692 05
1910	7,789	7,223	1,010	8,233	448	3,147	194,571 54
1911	8,037	7,249	1,002	8,251	406	3,256	200,164 41
1912	8,293	7,399	1,113	8,512	318	3,725	207,762 77
1913	8,681	7,502	1,199	8,701	353	3,741	218,125 02
1914	8,359	7,918	1,323	9,241	354	3,432	215,001 71
1915	7,302	6,867	1,211	8,078	391	3,391	190,028 37
1916	7,793	6,812	1,419	8,231	419	3,311	202,630 40
1917	8,751	7,520	1,599	9,119	358	3,661	227,094 09
1918	8,683	7,233	1,847	9,080	364	3,425	223,278 57

SESSIONAL PAPER No. 15

NATIONALITY OF INVENTORS.

Countries.	1911.	1912.	1913.	1914.	1915.	1916.	1917.	1918.
United States of America.....	4,885	4,997	4,964	5,220	4,645	4,972	5,772	5,631
Great Britain and Ireland.....	359	506	495	558	450	360	352	318
*Germany.....	304	336	307	300	107	14	10	2
Australia.....	77	99	75	76	76	76	62	53
France.....	97	108	100	115	83	55	45	34
New Zealand.....	33	46	47	50	29	31	37	35
Sweden.....	54	52	64	40	40	44	43	47
Belgium.....	25	20	23	33	19	21	5	3
*Austria.....	20	24	40	35	11	0	0	0
Italy.....	12	6	16	14	15	8	8	10
Switzerland.....	26	23	20	22	14	22	10	25
Denmark.....	5	14	15	16	11	12	18	9
Transvaal.....	16	10	7	1	3	3	3	2
Hungary.....	6	6	6	5	5	0	0	0
Russia.....	18	6	17	13	9	5	6	16
Norway.....	20	17	10	32	24	29	20	28
Newfoundland.....	3	1	2	1	1	1	0	0
Netherlands.....	0	.....	.....	7	4	2	2	0
Mexico.....	7	10	8	7	4	4	0	3
Cape Province.....	3	4	4	1	0	0	1	0
Cuba.....	5	1	1	9	3	0	0	1
Spain.....	3	.....	.....	1	1	3	0	1
Chile.....	1	.....	1	0	0	1	0	0
Finland.....	1	.....	1	0	0	0	0	1
Portugal.....	0	.....	.....	0	1	0	0	0
Roumania.....	1	1	.....	0	1	0	0	0
Grand Duchy of Luxemburg.....	0	.....	.....	0	3	0	0	0
Algeria.....	1	.....	.....	0	0	0	0	0
Japan.....	0	2	2	1	3	2	1	3
India.....	5	3	1	7	3	0	0	1
Natal.....	0	1	2	0	0	1	0	2
Nicaragua.....	1	.....	.....	0	0	0	0	0
Brazil.....	2	1	.....	1	3	0	2	3
Turkey.....	0	.....	.....	0	0	0	0	0
Poland.....	0	.....	.....	0	0	0	0	0
Holland.....	11	8	7	8	5	2	7	13
Argentine Republic.....	1	1	.....	2	3	5	3	2
Panama (Canal Zone).....	0	3	.....	3	0	1	0	0
Egypt.....	1	.....	.....	1	1	0	1	0
Southern Rhodesia.....	.....	.....	.....	0	0	2	0	1
Peru.....	.....	3	2	0	0	0	1	1
Hawaii.....	.....	3	3	0	0	2	4	4
Venezuela.....	.....	2	1	1	0	0	0	0
Trinidad.....	.....	1	.....	0	0	0	0	0
Porto Rico.....	.....	1	2	0	0	0	0	0
Tunis.....	.....	.....	1	0	0	0	0	0
Ceylon.....	.....	.....	1	0	0	0	0	0
Straits Settlements.....	.....	.....	1	0	0	0	3	0
Philippine Islands.....	.....	.....	.....	1	1	2	0	1
Canary Islands.....	.....	.....	.....	1	0	0	0	0
Java.....	.....	.....	.....	1	0	0	0	0
Channel Islands.....	.....	.....	.....	1	0	0	2	0
China.....	.....	.....	.....	.....	1	0	0	0
West Indies.....	.....	.....	.....	.....	1	0	0	2
Isle of Man.....	.....	.....	.....	.....	1	1	0	0
Norfolk Islands (South Pacific).....	.....	.....	.....	.....	2	1	0	0
Alaska.....	.....	.....	.....	.....	2	1	5	3
Bermuda.....	.....	.....	.....	.....	1	2	0	0
Zululand.....	.....	.....	.....	.....	0	1	0	0
Central America.....	.....	.....	.....	.....	.....	.....	1	2
Dutch East India.....	.....	.....	.....	.....	.....	.....	.....	2
Dominican Republic.....	.....	.....	.....	.....	.....	.....	.....	1

* All patents credited to Germany and Austria since 1914 are those in which the inventors, while residents of Germany or Austria, were citizens of countries which are not at war with Great Britain or her Allies, or patents which had been assigned previous to August 4, 1914, to assignees who are not alien enemies.

The total number of reports issued by the examiners during the year was 11,695 and 11 patents were surrendered and reissued.

Out of the total number of patents granted by this office during the year there were 5,631 issued to inventors or assignees resident in the United States, being 78 per cent of the whole issue.

IV. COPYRIGHTS, TRADE MARKS, INDUSTRIAL DESIGNS AND TIMBER MARKS.

STATEMENT of Fees received by the Copyright and Trade Mark Branch from April 1, 1917, to March 31, 1918.

Month.	Trade Marks.	Copy- rights.	Designs.	Timber Marks.	Assign- ments.	Copies.	Totals.
1917.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.	\$ cts.
April.....	3,360 90	154 20	158 00	4 00	24 00	4 00	3,705 10
May.....	3,145 25	158 00	128 00	2 00	39 00	19 75	3,492 00
June.....	2,810 20	121 50	50 00	.....	43 50	8 25	3,033 45
July.....	3,190 05	159 00	119 00	4 00	29 00	25 75	3,526 80
August.....	2,677 00	123 65	89 00	4 00	18 00	24 00	2,935 65
September.....	2,063 15	123 50	94 90	8 00	50 00	18 50	2,358 05
October.....	3,254 00	157 00	85 00	6 00	18 15	33 59	3,553 65
November.....	3,308 18	143 10	101 00	10 50	38 00	24 00	3,624 78
December.....	3,133 14	142 15	69 00	6 00	61 00	24 00	3,435 29
1918.							
January.....	4,039 97	110 30	88 00	... ..	62 00	23 00	4,323 27
February.....	3,370 76	118 65	74 00	9 00	32 00	17 00	3,621 41
March.. ..	3,475 03	170 10	135 60	7 05	40 00	35 50	3,862 68
	37,827 63	1,681 15	1,190 90	60 55	454 65	257 25	41,472 13
	9,039 95	25 00	122 40	16 00	3 50	.....	9,206 85
Refunds.....	28,787 68	1,656 15	1,168 50	44 55	451 15	257 25	32,265 28

SESSIONAL PAPER No. 15

The particulars of the registration made by the Copyright and Trade Mark Branch of the Department of Agriculture during the year ended March 31, 1918, was as follows:—

I. Copyrights—		
Full Copyrights without certificates	1,146	
Full Copyrights with certificates.....	112	
Temporary Copyrights without certificates.....	43	
Temporary Copyrights with certificates.....	1	
Interim Copyrights without certificates.....	112	
Interim Copyrights with certificates.....	15	
Renewals of Copyrights.....	11	
Assignments.....	31	
	1,471	
II. Trade Marks		987
Renewals of Specific Trade Marks.....		90
Assignments of Trade Marks.....		180
III. Industrial Designs		177
Renewals.....		11
Assignments.....		16
IV. Timber Marks.....		31
Assignments.....		7
Total Registrations		2,970

The following table shows a comparative statement of the business of this branch from 1908 to 1917, inclusive:—

Year.	Copyrights Registered.	Certificates of Copyright.	Trade Marks Registered.	Industrial Designs Registered.	Timber Marks Registered.	Assignments Registered.	Fees Received Gross.	Fees Received Net.
							\$ cts.	\$ cts.
1908.....	1,416	170	892	162	44	343	37,514 00	.....
1909.....	1,535	171	1,059	143	108	174	38,071 31	.....
1910.....	1,699	206	1,021	118	39	386	42,153 76	.....
1911.....	1,593	213	1,212	149	39	230	43,327 86	.....
1912.....	1,760	205	2,315	228	15	559	51,043 21	43,061 56
1913.....	1,835	207	1,378	165	57	264	49,409 68	41,251 98
1914.....	1,675	193	1,106	224	24	242	39,599 69	32,840 87
1915.....	1,477	146	1,019	215	27	279	35,653 21	29,645 11
1916.....	1,384	160	840	196	55	333	35,829 21	28,642 81
1917.....	1,440	128	987	177	31	234	41,472 13	32,265 28

V. PUBLIC HEALTH AND QUARANTINE.

I have the satisfaction of being able to state that no epidemic infectious disease from abroad has been allowed to enter Canada this year.

Coast Quarantine.—At my quarantine stations on the Atlantic and Pacific oceans, 239,125 persons have been inspected. In 1913 the number was 706,679.

Three hundred and six persons were admitted into hospital at the various stations. In 1913 the number was 1,996.

The greatly reduced number of persons inspected and of patients admitted to hospital, as compared with figures before the war, is doubtless due to the marked diminution of immigration owing to the war.

These figures of the year before the war are liable to be equalled or surpassed after it ends, when demobilization and return of our army takes place, and the tide of immigration once more sets in.

The diseases met with were smallpox, leprosy, diphtheria, scarlet fever, measles, mumps, dysentery, and erysipelas.

In every instance the disease was stamped out at the station, and so prevented from appearing inland.

Circulars.—Circular letters were issued from time to time to my different officers, drawing their attention to the various matters during the year connected with the appearances and movements of epidemic diseases abroad.

Inland Frontier Quarantine.—Smallpox having developed to an epidemic degree in the neighbouring state of Maine, an international frontier quarantine inspection was ordered at McAdam Junction, N.B., on August 15. This had to be continued until the 30th of September.

Owing to a renewed outbreak of this disease in Maine, and appearing especially amongst the potato reapers returning from that state to Canada, chiefly along the Aroostook border, an international frontier medical quarantine was instituted at Perth, N.B., at the various international highway crossings and on the Aroostook county frontier on November 2, 1917. Owing to the cessation of this threatening, I am causing this inspection to be discontinued after to-day.

Prince Edward Island, by the terms under which, as a province, she entered confederation, has the right of quarantine protection, by the Federal Government, from the other provinces of the Dominion, as well as from abroad. She is the only province that has such right. Smallpox having appeared to a threatening extent in Maine and in New Brunswick, I instituted, on March 4, at the request of the Government of Prince Edward Island, the quarantine medical inspection of the car ferry arriving at Port Borden, P.E.I., from the mainland, by my quarantine officer from Summerside.

This car ferry itself being the only and all-important means of regular communication, it was further represented to me that infection amongst its crew would be very serious. I therefore substituted for the inspection at the port of arrival at Port Borden,

SESSIONAL PAPER No. 15

P.E.I., an inspection on the trains between Sackville and Cape Tormentine, N.B. This inspection is still being enforced.

Leprosy.—The leper lazaretto, Tracadie, N.B. There are at present in this lazaretto thirteen lepers, six males and seven females, only about half the number there were a few years ago. Eleven are of French-Canadian (Acadian) origin, one of Icelandic, and one Russian.

There was one death during the year, a Syrian and one Acadian patient re-admitted.

Amelioration of symptoms and sufferings continues to be experienced and observed under the treatment now being carried out.

My officers report their high admiration of the continual devotion of the nursing religious sisters in their attendance on the lepers.

Darcy Island Lazaretto, B.C.—Five cases of leprosy have been admitted during the year, one Chilean-Kanaka, three Chinese and one Anglo-Indian.

The Chilean was so much recovered as to be no longer a danger to others by October last. He was therefore released, but reports from time to time for examination which so far has continued to prove negative.

Public Works Health Act.—My inspectors report that the general health of the men employed on the various works connected with the construction of railways, canals, bridges, tunnels, etc., has been exceptionally good, that the general sanitary conditions of the camps have been excellent, as has been also the attention given by the various contractors and district medical officers in complying with the requirements and regulations.

Changes in Stations.—Owing to the absence or very small number of foreign vessels arriving during the last few years at the ports of Prince Rupert, B.C., Digby, N.S., and Summerside, P.E.I., it has been directed that these ports revert to the position common to all the smaller ports on each ocean. For the future therefore they will be rated amongst the Unorganized Maritime Quarantine Stations.

The whole respectfully submitted.

T. A. CRERAR,
Minister of Agriculture.

PUBLIC HEALTH.

APPENDIX No. 1.

MARCH 31, 1918.

SIR,—I was appointed by Order in Council, on January 14, 1899, sanitary adviser to the Dominion Government. As such I have yearly, since then, included in my annual report a synopsis of the progress of infectious disease throughout the world during the year. Also a short account of what has been accomplished during the year in the way of the advancement of sanitary science, and of the measures for the treatment and control of epidemic disease.

I have, however, recently received officially a copy of a printed circular headed "Suggestions for the Preparation of Government Reports," prepared by the Editorial Committee, and approved by Order in Council on October 23, 1917. It includes amongst other things the following directions:—

"Annual reports should be confined to concise accounts of the work of the several departments during the period covered by the reports."

"Contributions to knowledge, in the form of scientific discussion, should have no place in an annual report."

"For the purposes of the annual record, the formal introduction and signature, 'I have the honour to submit herewith my annual report,' etc., and 'I have the honour to be, Sir,' etc., will be dropped, and the form substituted: 'John Doe, Dominion Lands Agent at Grande Prairie, Alberta, reports as follows.'"

In accordance therewith,

Frederick Montizambert, C.M.G., I.S.O.; M.D. Edin, F.R.C.S.E., D.C.L., Director General of Public Health and Sanitary Adviser of the Dominion Government, Ottawa, Ont., reports as follows:—

Coast Quarantines.—At your various quarantine stations on the Atlantic and Pacific coasts, 1,460 vessels from foreign ports were inspected. Number of persons inspected, 239,125. Admissions to hospital for epidemic disease, 306. In the last year before the war the numbers were: persons inspected, 706,679; admissions to hospitals, 1,996.

These figures of the last year before the war are liable to be equalled or surpassed after it ends. The demobilization and return of our army will then take place, and the tide of immigration once more set in.

The diseases met with were small-pox, leprosy, diphtheria, scarlet fever, measles, mumps, dysentery, and erysipelas.

In every instance the disease was stamped out at the station, and so prevented from appearing inland.

Inland International Frontier Quarantine.—On account of the existence in epidemic form of small-pox in the state of Maine, U.S.A., it was ordered that frontier quarantine inspection against that disease be instituted at McAdam Junction, N.B., August 15. Dr. J. B. Morrison was appointed temporary medical quarantine inspector at that railway port of entry. He remained on that duty until September 30, when that temporary quarantine was raised.

Small-pox having been developed in an epidemic form in the state of Maine, and appearing especially amongst the potato reapers returning from that state to Canada,

chiefly along the Aroostook border, it was ordered that frontier quarantine inspection against that disease should be initiated. Dr. Earle, of Perth, was accordingly appointed temporary medical quarantine inspector for the international highway crossings and Aroostook County frontier on November 2, 1917. Guards under him covered the various highways, reporting to him. Owing to the cessation of the threatening, this frontier quarantine inspection has been directed to be discontinued after to-day.

Prince Edward Island, by the terms under which she entered Confederation, has the right of quarantine protection, by the Federal Government, against the other provinces of the Dominion. She is the only province that has such right. Cases of smallpox to an epidemic extent having appeared in New Brunswick, you instituted, on the request of the Government of Prince Edward Island, the quarantine medical inspection of the car ferry arriving at Port Borden, P.E.I., from the mainland on March 4 by Dr. MacNeill, your quarantine officer at Summerside, P.E.I. The car ferry itself being the all-important and only means of regular communication, the Government of Prince Edward Island requested its protection also, and in compliance you changed the inspection, causing it to be made on the trains between Sackville and Cape Tormentine. To this duty Dr. Geo. M. Cook, of Sackville, was appointed. This inspection is still being carried on.

Circulars.—Circular letters were issued from time to time to your different officers, calling their attention to the various matters during the year connected with the appearances of epidemic diseases abroad.

Bulletins, etc., received.—The weekly Public Health Reports of the United States Public Health Service have been regularly received. They are of great value, as are also the monthly bulletins from provincial, state and municipal boards of health in Canada, the United States, and other countries. The bulletins of the International Office of Public Health, Paris, have been regularly received throughout the year and spare copies distributed to the provincial boards of health.

Official visits, inspections, etc.—On the 13th of June I left to attend the annual meeting of the Canadian Medical Association, held in Montreal.

On June 27 I left for inspection duty on the Atlantic seaboard. I inspected the quarantine station at Grosse Isle, on the river St. Lawrence; the leper lazaretto at Tracadie, N.B.; the quarantine stations at Chatham and St. John, N.B.; Digby, Halifax, Sydney and Louisburg, N.S.; and Charlottetown and Summerside, P.E.I.

On August 10 I left for the Pacific coast. I inspected at Vancouver, Victoria, William Head, and Prince Rupert, and the leper lazaretto at Darcy island.

On September 26-28 I attended the annual meeting of the Canadian Association for the Prevention of Tuberculosis, and the Canadian Public Health Association, held in Ottawa.

On October 25 I attended, at Toronto, the official opening of the new laboratories of the University of Toronto.

Stations, etc., Grosse Isle, Que.—Vessels inspected and persons examined at Grosse Isle and its substation Rimouski:—

	Grosse Isle.	Rimouski.	Total.
Vessels inspected..	349	29	378
Persons inspected..	30,127	10,858	40,985

The number of persons inspected shows a decrease of 252,383 as compared with 1913.

Infectious disease occurred on eleven vessels. The admissions to hospital were 26. In 1913 they were 1,720.

These figures of 1913 are liable to be equalled or surpassed after the war.

SESSIONAL PAPER No. 15

Halifax, N.S.—Vessels inspected, 504. Persons inspected, 36,910. Admission to hospital, 1.

No serious damage was done to the quarantine buildings by the explosion on December 6, 1917.

St. John, N.B.—Vessels inspected, 185. Persons inspected, 26,002. Admissions to hospital, 2.

Chatham, N.B.—Vessels, 1 only, as against 120 in the previous year. No quarantinable disease.

Digby, N.S.—No vessels for quarantine inspection.

Sydney, N.S.—Vessels inspected, 113. Persons inspected, 4,255. No quarantinable disease.

Louisburg, N.S.—Vessels inspected, 78. Persons inspected, 3,311. No quarantinable disease.

Charlottetown, P.E.I.—Vessels inspected, 2. Persons inspected, 41. Admitted to hospital, 1.

Summerside, P.E.I.—Vessels inspected 1. Persons inspected, 6. No quarantinable disease.

William Head, B.C.—Vessels inspected, 198. Persons inspected, 127,602. Admissions to hospital, 260. Diseases: Smallpox, mumps, scarlet fever, measles, dysentery, and erysipelas. Contacts landed for quarantine of observation, 4,837.

In the handling of the 84,473 coolies who entered at this port, the military authorities established a receiving and clearing camp at the extended portion of the William Head station.

Victoria, B.C.—No vessels inspected.

Vancouver, B.C.—No vessels inspected.

Prince Rupert, B.C.—No vessels inspected.

Leper Lazaretto, Tracadie, N.B.—There are now only thirteen patients in this institution, only about half the number there were a few years ago. There are six males and seven females. Eleven are of French-Canadian (Acadian) origin, one of Icelandic, and one of Russian.

There was one death during the year, a Syrian, and one Acadian re-admitted.

Amelioration of symptoms continues to be experienced under the treatment now in use.

Leper Lazaretto, Darcy Island, B.C.—Five cases of leprosy have been admitted during the year, one Chilean-Kanaka, three Chinese, and one Anglo-Indian.

The Chilean was so much recovered as to be no longer a danger to others by October last. He was therefore released, but reports from time to time for examination, which so far has continued to prove negative.

Public Works Health Act.—The inspectors report that the general health of the men employed on the various works connected with the construction of railroads, canals, bridges, tunnels, etc., has been exceptionally good, that the general sanitary conditions of the camps have been excellent, as has also been the attention given by the various contractors and district medical officers in complying with the requirements and regulations.

Changes in Stations.—Owing to the absence or very small number of foreign vessels arriving during the last few years at the ports of Prince Rupert, B.C., Digby, N.S., and Summerside, P.E.I., it has been directed that these ports revert to the position common to all the smaller ports on each ocean. For the future therefore they will be rated amongst the Unorganized Maritime Quarantine Stations.

MISCELLANEOUS.

APPENDIX No. 2.

EXHIBITIONS.

OTTAWA, March 31, 1918.

Mr. William Hutchison, the Canadian Exhibition Commissioner, reports as follows:—

As mentioned in my report for the last fiscal year, our exhibit had been installed at the Panama-California International Exposition of San Diego since the beginning of 1917, and had proved quite successful both from the point of view of attendance and for the very extensive and free newspaper publicity secured for Canada.

At the end of the year 1916, your department had acceded to the wishes of the management of the San Diego Exposition to extend our participation there for three more months, as it was deemed advisable to take advantage of the large number of tourists who come to Southern California during the winter season. At the end of March, 1917, the exposition authorities again expressed the desire that we should continue our participation until further notice, or at least for another term of three months.

At that time the city of Los Angeles was getting ready for an exposition, which from all appearances bid fair to be a very important one. "The District Fair Association of California" was expected to open in September, 1917, on the State Exhibition grounds, which are situated almost in the heart of the city. Its main feature was to be a live-stock show, which would have included the finest specimens not only of California, but also of the whole of the Middle West.

Negotiations were entered upon between the authorities of the Los Angeles exhibition and the Canadian Government through the Canadian Exhibition Commissioner at San Diego, with a view to have our exhibit installed at that fair.

Another request of similar nature came from the management of the Merchants and Manufacturers Exchange of New York to exhibit in the Grand Central Palace, in that city, in the course of 1917. Due consideration was also given to this proposition.

While the above pourparlers were going on, it was deemed advisable to maintain the Canadian exhibit in its actual state at the San Diego Exposition—until some decision was arrived at concerning the proposed participations.

On May 11, 1917, the Canadian Exhibition Commissioner at San Diego, was notified by your department that, in view of conditions resulting from the war, the Government had decided not to have the exhibit installed elsewhere for the time being, and that no large exhibition in which we might participate being in sight, it was deemed advisable to have the exhibit shipped to Ottawa and stored there until further instructions.

We accordingly proceeded with due diligence to the packing of our exhibit, which was shipped to Ottawa; but owing to the scarcity of cars, and also the congestion of traffic existing at the time on American railroads, some delay occurred in the arrival of our goods in Ottawa. However, about the latter part of August, all our exhibits had arrived safely and had been stored in a building on Wellington street rented for that purpose by the Government.

9 GEORGE V, A. 1919

The work of overhauling the cases and putting all the exhibits in a condition, such as would make them fit for shipment and display at a moment's notice, is being carried out by the members of the exhibition staff. The very considerable stock of our exhibition goods—which necessitates fifteen to twenty large freight cars for transportation—requires for its proper handling and maintenance, constant care and much labour. Especially may this be said regarding the upkeep of our numerous specimens of Canadian fauna. This work is satisfactorily attended to, and everything is held in readiness for the prompt carrying out of further instructions.